The Southern Surgeon

Subscription in the United States, $5.00

Vol. XI, No. 12 December, 1942

THE DOCTORS OF AMERICA WILL DO THEIR BEST

Our January editorial said in part:

"Winning this War is going to be quite a job. In it no group will bear heavier duties and responsibilities than the medical profession: no group will shoulder those burdens with more cheerful patriotism . . .

"Those who are lucky will be allowed to enter the military services, and they will have their hands full until the War is won.

"Many doctors, regardless of their wishes in the matter, will have to stay at home. The fighting man will not be able to do his best if he fear his wife and family are lacking necessary medical attention. The average doctor who stays at home will have to work harder than ever . . . and he will have to study to anticipate epidemics and other exigencies . . .

"The doctors of America will do their best."

The doctors of America have been and are doing their best, but for those left at home the essentials of practice occupy every minute: nonessentials such as medical meetings must be passed up for the duration. With the Editor-in-Chief and Associate Editor J. Duffy Hancock already in the Army, THE SOUTHERN SURGEON suspends publication until the War is won.

In this, the last issue of THE SOUTHERN SURGEON for the duration, we publish, for the second time in one year, the Rosters of The Southeastern Surgical Congress and of the Texas Surgical Society. We point with pride to the number of our members now in the armed forces: when the Rosters appeared in January there were 26 men on active military duty: now there are 115 members of The Southeastern Surgical Congress, 14 members of the Texas Surgical Society. All the surgeons who are left at home will be waiting to join them on their return. All are looking forward to the meetings after the War. And immediately thereafter THE SOUTHERN SURGEON will appear again "to encourage surgeons in the Southern States, especially the younger ones."

ROSTER

of

THE SOUTHEASTERN SURGICAL CONGRESS

AS OF NOVEMBER 20, 1942

OFFICERS

DR. ALTON OCHSNER, *President*
New Orleans

DR. F. J. WAAS, *Vice-President*
Jacksonville

DR. E. L. HENDERSON, *President-Elect*
Louisville

DR. B. T. BEASLEY, *Secretary-Treasurer*
701 Hurt Building
Atlanta

HONORARY FELLOWS

DR. W. WAYNE BABCOCK.....11 St. Asaples Road, Bala, Pa.
DR. D. C. BALFOUR.....102 Second Ave., S. W., Rochester, Minn.
DR. LEWELLYN F. BARKER.....1035 N. Clavert St., Baltimore, Md.
DR. VILRAY P. BLAIR.....508 N. Grand Boulevard, St. Louis, Mo.
DR. J. L. CAMPBELL.....478 Peachtree St., N. E., Atlanta, Ga.
DR. W. L. CHAMPION.....478 Peachtree St., N. E., Atlanta, Ga.
DR. GEORGE N. CRILE.....2020 East 93rd St., Cleveland, Ohio
DR. W. S. ELKIN.....478 Peachtree St., N. E., Atlanta, Ga.
DR. J. F. ERDMANN.....122 East 70th St., New York, N. Y.
DR. W. S. GOLDSMITH.....Daytona Beach, Fla.
DR. J. SHELTON HORSLEY.....617 W. Grace St., Richmond, Va.
DR. CHEVALIER JACKSON.....3432 N. Broad St., Philadelphia, Pa.
DR. F. H. LAHEY.....605 Commonwealth Ave., Boston, Mass.
DR. HOWARD LILIENTHAL.....20 West 77th St., New York, N. Y.
DR. RUDOLPH MATAS.....3523 Prytania St., New Orleans, La.
DR. J. F. MCCARTHY.....2 East 54th St., New York, N. Y.
DR. A. T. MCCORMACK.....620 South 3rd St., Louisville, Ky.
DR. J. T. MOORE.....1215 Walker Ave., Houston, Texas
DR. J. J. MOORHEAD.....115 East 64th St., New York, N. Y.
DR. HUGH H. YOUNG.....Johns Hopkins Hospital, Baltimore, Md.

ALABAMA

SENIOR FELLOWS

DR. REMBERT BAYNE.....116 Mabry St., Selma
DR. W. H. BLAKE, JR.....Sheffield
DR. R. M. BRANNON.....2121 Highland Ave., Birmingham
DR. E. V. CALDWELL.....604 Adams Ave., Huntsville
DR. CHARLES N. CARRAWAY.....2501 16th Ave., North, Birmingham
DR. W. R. CARTER.....Repton
DR. C. H. CHAPMAN.....Box 566, Andalusia

*In active Military Service.

Dr. C. J. Colquitt.....306 Realty Building, Bessemer
Dr. H. Earle Conwell.....Medical Arts Building, Birmingham
Dr. French H. Craddock.....Sylacauga
Dr. M. Y. Dabney.....Woodward Building, Birmingham
Dr. Edgar W. Davis.....1150 Conn. Ave., Washington, D. C.
Dr. P. Y. Donald.....100 Church St., Selma
Dr. G. F. Douglas.....1111 South 20th St., Birmingham
Dr. John T. Ellis.....814 So. St. Andrews St., Dothan
Dr. C. H. Ford.....Medical Arts Building, Birmingham
Dr. A. J. Gay.....Roanoke
Dr. Edward L. Gibson.....Enterprise
*Dr. Albert H. Green
Dr. R. C. Green.....5357 First Ave., North, Birmingham
Dr. H. D. Greer.....Decatur Clinic, Decatur
Dr. E. H. Hargis.....1131 North 28th St., Birmingham
Dr. W. F. Harper.....P. O. Box 269, Selma
Dr. R. S. Hill.....48 Gilmer Ave., Montgomery
Dr. J. L. Hillhouse.....Medical Arts Building, Birmingham
Dr. A. C. Jackson.....1100 South Ave., Jasper
Dr. H. L. Jackson.....Empire Building, Birmingham
Dr. L. E. Kirby.....5357 North First Ave., Birmingham
Dr. J. O. Lisenby.....100 So. Church St., Atmore
Dr. Kenneth E. Luckie.....217 Broad St., Selma
*Dr. John A. Martin
Dr. J. M. Mason.....1023 South 20th St., Birmingham
Dr. T. K. McFatter.....1108 Laurel Ave., Dothan
Dr. W. R. Meeker.....109 N. Conception St., Mobile
Dr. C. H. Moore.....Medical Arts Building, Birmingham
Dr. C. W. C. Moore.....129 North St., Talladega
Dr. D. S. Moore.....1127 South 12th St., Birmingham
Dr. J. O. Morgan.....Gadsden
Dr. J. R. Morgan.....900 South 20th St., Birmingham
Dr. S. O. Moseley.....DuBose Building, Selma
Dr. Paul Nickerson.....Sylacauga
Dr. Lloyd Noland.....Fairfield
Dr. R. M. Pool.....Fairfield
Dr. A. W. Ralls.....1136 6th Ave., Gadsden
Dr. J. U. Reaves.....Van Antwerp Building, Mobile
Dr. C. L. Salter.....Talladega
Dr. P. P. Salter.....Eufaula
Dr. H. E. Simon.....2930 12th Ave., North, Birmingham
Dr. Marcus Skinner.....Marcus Skinner Clinic, Selma
Dr. S. H. Stephens.....First National Bank Building, Mobile
Dr. R. C. Stewart.....Sylacauga
Dr. S. G. Stubbins.....2121 Highland Ave., Birmingham
*Dr. S. R. Terhune
Dr. Lee F. Turlington.....1922 South 10th Ave., Birmingham
Dr. S. S. Underwood.....Medical Arts Building, Birmingham
Dr. Jerre Watson.....121 East 9th St., Anniston

Junior Fellows

Dr. C. H. Gillespy.....1115 South 20th St., Birmingham

*In active Military Service.

*Dr. Henry Y. Harper
Dr. A. F. Holley.....P. O. Box 144, Brewton
Dr. J. S. Jordan.....5357 First Ave., North, Birmingham
Dr. O. L. Jordan.....503 Queen City Ave., Tuscaloosa
Dr. W. H. Spruell.....Russellville
*Dr. Gerald H. Teasley

FLORIDA

Senior Fellows

Dr. A. M. Ames.....Blount Building, Pensacola
Dr. T. H. Bates.....27 W. Madison St., Lake City
Dr. L. F. Carlton.....Citizens Bank Building, Tampa
*Dr. J. R. Chappell
*Dr. C. Frank Chunn
Dr. Charles J. Collins.....1503 Kuhl Ave., Orlando
Dr. J. C. Davis.....Box 465, Quincy
*Dr. L. T. Furlow
Dr. R. A. Gowdy.....541 Lincoln Road, Miami Beach
Dr. F. D. Gray.....12 N. Rosalind Ave., Orlando
Dr. J. H. Hartman.....2750 Riverside Ave., Jacksonville
Dr. J. M. Hoffman.....1221 E. DeSota St., Pensacola
Dr. Gerry R. Holden.....1022 Park St., Jacksonville
*Dr. T. W. Hutson
Dr. Edward Jelks.....2033 Riverside Ave., Jacksonville
Dr. Walter C. Jones.....Huntington Building, Miami
Dr. J. G. Lyerly.....Greenleaf Building, Jacksonville
Dr. J. S. McEwan.....Clinic Building, Orlando
Dr. K. A. Morris.....238 W. Church St., Jacksonville
*Dr. D. R. Murphey, Jr.
Dr. Lloyd J. Netto.....319 Clematis St., West Palm Beach
Dr. L. M. Orr.....307 S. Orange Ave., Orlando
*Dr. W. Duncan Owens
Dr. C. Panettiere.....541 Lincoln Road, Miami Beach
Dr. J. C. Pate.....First National Bank Bldg., Tampa
Dr. W. G. Payne.....Blount Building, Pensacola
Dr. E. G. Peek.....Box 475, Ocala
Dr. C. L. Perry.....525 N. E. 15th St., Miami
Dr. J. H. Pound.....121 E. College Ave., Tallahassee
Dr. Jay A. Powell.....627 S. Olive Ave., West Palm Beach
Dr. Shaler Richardson.....111 W. Adams St., Jacksonville
Dr. L. F. Robinson.....Sweet Building, Ft. Lauderdale
Dr. J. W. Snyder.....Huntington Building, Miami
*Dr. J. S. Stewart
Dr. W. D. Sugg.....Professional Building, Bradenton
Dr. G. C. Tillman.....505 W. University Ave., Gainesville
Dr. J. S. Turberville.....Century
Dr. H. W. Virgin.....4030 Poinciana Ave., Coconut Grove, Miami
Dr. F. A. Vogt.....Huntington Building, Miami
Dr. F. J. Waas.....Professional Building, Jacksonville
Dr. H. A. Walker.....605 Lincoln Road, Miami Beach
Dr. Herman Watson.....P. O. Box 1021, Lakeland

*In active Military Service.

Dr. C. C. Webb.....24 W. Chase St., Pensacola
Dr. A. H. Weiland.....Coral Gables Clinic, Coral Gables
*Dr. J. R. Wells
Dr. Hugh West.....Dreka Building, DeLand
Dr. H. E. White.....P. O. Box 606, St. Augustine

Junior Fellows

*Dr. Milton N. Camp
*Dr. E. W. Cullipher
*Dr. L. W. Dowlen
Dr. J. L. Hargrove.....Bartow
Dr. H. G. Holland.....Leesburg
Dr. S. G. Kennedy, Jr.....1221 E. DeSoto St., Pensacola
Dr. A. H. Lisenby.....Panama City
Dr. L. U. Lumpkin.....15 S. E. 16th St., Ft. Lauderdale
Dr. A. Edward Mock.....24 W. Chase St., Pensacola
Dr. R. H. Walker, Jr.....307 S. Orange Ave., Orlando
Dr. C. D. Whitaker.....200 Jefferson St., Marianna

GEORGIA

Senior Fellows

Dr. T. B. Armstrong.....Candler Building, Atlanta
Dr. H. H. Askew.....Candler Building, Atlanta
Dr. L. G. Baggett.....478 Peachtree St., N. E., Atlanta
Dr. E. G. Ballenger.....Healey Building, Atlanta
Dr. W. W. Battey.....561 Telfair St., Augusta
Dr. W. L. Bazemore.....553 Walnut St., Macon
Dr. B. T. Beasley.....Hurt Building, Atlanta
Dr. Richard Binion.....P. O. Box 454, Milledgeville
Dr. H. W. Birdsong.....220 College Ave., Athens
Dr. F. K. Boland.....478 Peachtree St., N. E., Atlanta
*Dr. F. K. Boland, Jr.
Dr. L. A. Brown, Jr.....478 Peachtree St., N. E., Atlanta
Dr. S. T. Brown.....Medical Arts Building, Atlanta
Dr. S. D. Brown.....Royston
*Dr. B. R. Burke
Dr. J. K. Burns.....Gainesville
Dr. Enoch Callaway.....La Grange
Dr. Gordon Chason.....Bainbridge
Dr. J. R. Childs.....Medical Arts Building, Atlanta
Dr. Grady Clay.....Medical Arts Building, Atlanta
Dr. B. H. Clifton.....478 Peachtree St., N. E., Atlanta
*Dr. Hugh Cochran
Dr. O. S. Cofer.....478 Peachtree St., N. E., Atlanta
Dr. G. N. Coker.....Canton
Dr. W. A. Coleman.....Eastman
Dr. W. L. Cooke.....1310 Broadway, Columbus
Dr. H. C. Crawford.....478 Peachtree St., N. E., Atlanta
Dr. C. H. Daniel.....801 W. Rugby Ave., College Park
*Dr. J. Weyman Davis

*In active Military Service.

Dr. S. C. Davis.....35 Linden Ave., N. E., Atlanta
Dr. T. C. Davison.....478 Peachtree St., N. E., Atlanta
Dr. John Duncan.....478 Peachtree St., N. E., Atlanta
*Dr. Laurence B. Dunn
Dr. W. B. DuVall.....26 Linden Ave., N. E., Atlanta
Dr. J. W. Edmondson.....Beeville, Texas
Dr. Murdock Equen.....144 Ponce de Leon Ave., N. E., Atlanta
Dr. F. L. Eskridge.....744 W. Peachtree St., Atlanta
Dr. George Eubanks.....478 Peachtree St., N. E., Atlanta
*Dr. Edgar F. Fincher, Jr.
Dr. L. C. Fischer.....35 Linden Ave., N. E., Atlanta
Dr. R. C. Franklin.....Swainsboro
Dr. G. W. Fuller.....478 Peachtree St., N. E., Atlanta
Dr. J. G. Gay.....104 Ponce de Leon Ave., Atlanta
Dr. T. P. Goodwyn.....478 Peachtree St., N. E., Atlanta
Dr. C. B. Greer.....Brunswick
Dr. Edward W. Grove.....address unknown
Dr. Murl M. Hagood.....Marietta
*Dr. W. G. Hamm
Dr. Lester Harbin.....104 East 3rd Ave., Rome
*Dr. Emery C. Herman
Dr. A. H. Hilsman.....206 N. Jefferson St., Albany
Dr. W. R. Holmes, Jr.....478 Peachtree St., N. E., Atlanta
Dr. C. F. Holton.....19 E. Gordon St., Savannah
*Dr. M. A. Hubert
Dr. K. S. Hunt.....319 South 8th St., Griffin
Dr. Conway Hunter.....770 Cypress St., N. E., Atlanta
*Dr. Ralph N. Johnson
Dr. S. A. Kirkland.....478 Peachtree St., N. E., Atlanta
*Dr. A. O. Linch
Dr. Arthur D. Little.....Upchurch Building, Thomasville
Dr. A. G. Little.....Valdosta
Dr. R. C. Major.....384 Peachtree St., N. E., Atlanta
Dr. O. H. Matthews.....139 Forrest Ave., N. E., Atlanta
Dr. J. T. McCall.....310 S. Broad St., Rome
Dr. R. H. McClung.....Candler Building, Atlanta
Dr. H. P. McDonald.....Healey Building, Atlanta
Dr. W. L. McDougall.....478 Peachtree St., N. E., Atlanta
Dr. H. M. McKemie.....Exchange Bank Building, Albany
Dr. Hal Miller.....478 Peachtree St., N. E., Atlanta
Dr. B. H. Minchew.....Drawer 816, Waycross
Dr. A. J. Mooney, Sr.....Statesboro
Dr. F. K. Neill.....Exchange Bank Building, Albany
Dr. R. G. Newton.....Persons Building, Macon
Dr. W. P. Nicolson, Jr.....478 Peachtree St., N. E., Atlanta
Dr. J. C. Patterson.....Cuthbert
*Dr. J. H. Pinholster
Dr. J. L. Pittman.....478 Peachtree St., N. E., Atlanta
*Dr. D. Henry Poer
Dr. Marion C. Pruitt.....Medical Arts Building, Atlanta
Dr. J. K. Quattlebaum.....24 W. Gaston St., Savannah
Dr. G. W. Quillian.....Retired

*In active Military Service.

Dr. W. E. Quillian.....986 Ponce de Leon Ave., N. E., Atlanta
Dr. F. B. Rawlings.....Sandersville
Dr. J. C. Read.....Medical Arts Building, Atlanta
Dr. C. H. Richardson.....700 Spring St., Macon
Dr. C. W. Roberts.....26 Linden Ave., N. E., Atlanta
Dr. R. L. Rogers.....Jackson Building, Gainesville
Dr. L. C. Rouglin.....First National Bank Bldg., Atlanta
Dr. A. R. Rozar.....1309 Oglethorpe St., Macon
Dr. C. E. Rushin.....478 Peachtree St., N. E., Atlanta
Dr. Dan Y. Sage.....Medical Arts Building, Atlanta
Dr. J. C. Sandison.....478 Peachtree St., N. E., Atlanta
Dr. W. A. Selman.....157 Forrest Ave., N. E., Atlanta
Dr. B. L. Shackleford.....Medical Arts Building, Atlanta
Dr. C. Thompson.....The Millen Hospital, Millen
Dr. D. N. Thompson.....49 College Ave., Elberton
Dr. J. W. Turner.....151 Ponce de Leon Ave., Atlanta
Dr. W. E. Upchurch.....478 Peachtree St., N. E., Atlanta
*Dr. Exum Walker
Dr. Charley K. Wall.....Thomasville
Dr. J. C. Weaver.....78 Ellis St., Atlanta
Dr. C. D. Whelchel.....Gainesville
*Dr. E. A. Wilcox
Dr. C. E. Wills.....Washington
Dr. B. T. Wise.....Americus
Dr. Sam Wise.....Americus
Dr. E. S. Wright.....Medical Arts Building, Atlanta
Dr. Jesse H. York.....Medical Arts Building, Atlanta

Junior Fellows

*Dr. G. F. Archer
Dr. S. T. Barnett, Jr.....26 Linden Ave., N. E., Atlanta
*Dr. N. B. Bateman, Jr.
Dr. J. C. Blalock.....Medical Arts Building, Atlanta
*Dr. J. H. Boland
*Dr. T. J. Floyd, Jr.
*Dr. Carl C. Garver
*Dr. W. R. Glenn
*Dr. K. D. Grace
*Dr. F. P. Holder
Dr. O. D. Lennard.....Sandersville
Dr. T. V. Matthews.....3075 Peachtree Road, Atlanta
Dr. H. R. Maulding.....Medical Arts Building, Atlanta
*Dr. J. G. McDaniel
*Dr. Marvin Mitchell
*Dr. W. E. Mitchell
*Dr. John Mooney, Jr.
*Dr. S. D. Murray
Dr. R. E. Newberry.....Candler Building, Atlanta
*Dr. H. S. Phillips
*Dr. J. E. Porter
*Dr. Charles Rieser
*Dr. A. S. Sanders
*Dr. W. B. Schaefer

*In active Military Service.

KENTUCKY

Senior Fellows

Dr. Irvin Abell.....321 W. Broadway, Louisville
*Dr. Irvin Abell, Jr.
Dr. E. S. Allen.....740 Francis Building, Louisville
*Dr. E. S. Allen, Jr.
Dr. I. A. Arnold.....552 Francis Building, Louisville
Dr. W. B. Atkinson.....Campbellsville
Dr. A. B. Barrett.....200 N. Upper St., Lexington
Dr. B. J. Baute.....Lebanon
*Dr. H. I. Berman
Dr. J. H. Blackburn.....Bowling Green
Dr. W. O. Bullock.....190 N. Upper St., Lexington
Dr. S. G. Carr.....Richmond
Dr. Misch Casper.....Starks Building, Louisville
Dr. B. E. Caywood.....Danville
*Dr. D. M. Clardy
*Dr. L. L. Cull
*Dr. John Dickinson
Dr. C. M. Edelen.....Brown Building, Louisville
Dr. L. R. Ellars.....Heyburn Building, Louisville
Dr. R. M. Evans.....Breslin Building, Louisville
Dr. M. D. Flanary.....Pikeville
Dr. C. G. Follis.....Glasgow
Dr. L. W. Frank.....332 W. Broadway, Louisville
Dr. J. M. Frehling.....900 16th St., Miami Beach, Fla.
*Dr. J. T. Fuller
Dr. J. P. Glenn.....Fifth and Main Sts., Russellville
Dr. G. Y. Graves.....1109 State St., Bowling Green
Dr. Lattie Graves.....Scottsville
Dr. A. E. Grimes.....200 West 2nd St., Lexington
*Dr. R. A. Griswold
*Dr. D. P. Hall
Dr. P. B. Hall.....Paintsville
*Dr. J. D. Hancock
Dr. E. L. Henderson.....1110 Francis Building, Louisville
Dr. I. J. Hoover.....103 West 4th St., Owensboro
Dr. Hal E. Houston.....North 5th St., Murray
Dr. C. C. Howard.....Times Building, Glasgow
Dr. W. I. Hume.....Heyburn Building, Louisville
Dr. H. A. Jakeman.....Stanford
Dr. Franklin Jelsma.....Heyburn Building, Louisville
Dr. H. V. Johnson.....125 S. Hamilton St., Georgetown
*Dr. Wm. O. Johnson
Dr. J. B. Lukins.....Francis Building, Louisville
Dr. Herman Mahaffey.....Francis Building, Louisville
Dr. Hugh Mahaffey.....North 2nd St., Richmond
Dr. F. M. Massie.....211 Ninth Broadway, Lexington
Dr. W. B. Owen.....Heyburn Building, Louisville
Dr. W. H. Pennington.....190 N. Upper St., Lexington
Dr. C. R. Petty.....Lynch Hospital, Lynch

*In active Military Service.

*Dr. George E. Pryor
*Dr. Fred W. Rankin
*Dr. E. H. Ray
*Dr. R. E. Reichert
*Dr. S. M. Rickman
Dr. R. W. Robertson.....Citizens Bank Bldg., Paducah
Dr. B. F. Robinson.....221 S. Hanover Ave., Lexington
*Dr. H. G. Saam, Jr.
Dr. G. L. Simpson.....S. Main St., Greenville
Dr. C. D. Snyder.....223 Lyttle Boulevard, Hazard
Dr. F. A. Vernon.....Pikeville
Dr. C. F. Wood.....Heyburn Building, Louisville
*Dr. C. C. Woods

Junior Fellows

Dr. S. E. Paris.....Brownsville
*Dr. C. P. Shields

LOUISIANA

Senior Fellows

Dr. L. W. Alexander.....Maison Blanche Building, New Orleans
Dr. H. B. Alsobrook.....Canal Bank Building, New Orleans
Dr. G. C. Anderson.....3431 Prytania St., New Orleans
Dr. W. L. Bendel.....400 St. John St., Monroe
Dr. F. F. Boyce.....Union Building, New Orleans
Dr. H. F. Brewster.....Union Building, New Orleans
*Dr. Louis J. Bristow, Jr.
Dr. Edgar Burns.....3503 Prytania St., New Orleans
Dr. P. J. Carter.....Pere Marquette Building, New Orleans
Dr. Isidore Cohn.....1522 Aline St., New Orleans
*Dr. Conrad G. Collins
Dr. S. M. Copland.....1415 Delachaise St., New Orleans
Dr. J. A. Danna.....Chaille Building, New Orleans
Dr. J. W. Faulk.....Crowley
Dr. B. C. Garrett.....940 Margaret Place, Shreveport
Dr. G. G. Garrett.....940 Margaret Place, Shreveport
Dr. J. Q. Graves.....128 DeSiard St., Monroe
Dr. Katherine Havard.....2705 Prytania St., New Orleans
Dr. A. Jacobs.....2616 Napoleon Ave., New Orleans
Dr. P. J. Kahle.....Pere Marquette Building, New Orleans
Dr. E. L. King.....1521 Delachaise St., New Orleans
Dr. J. E. Landry.....2000 Tulane Ave., New Orleans
Dr. H. R. Mahorner.....Hibernia Building, New Orleans
Dr. G. A. Mayer.....Canal Bank Building, New Orleans
Dr. A. J. McComiskey.....3420 Prytania St., New Orleans
Dr. T. J. McHugh.....Reymond Building, Baton Rouge
*Dr. J. G. Menville
Dr. W. R. Metz.....Canal Bank Building, New Orleans
Dr. H. E. Miller.....Medical Arts Building, New Orleans
Dr. Walter Moss.....220 Foster St., Lake Charles
Dr. J. T. Nix.....1407 S. Carrollton Ave., New Orleans
Dr. Alton Ochsner.....1347 Exposition Boulevard, New Orleans

*In active Military Service.

Dr. J. T. O'Ferrall.....3411 Prytania St., New Orleans
Dr. Neal Owens.....200 Carondelet St., New Orleans
Dr. F. W. Pickell.....Reymond Building, Baton Rouge
Dr. W. A. Reed.....Union Building, New Orleans
Dr. O. C. Rigby.....Medical Arts Building, Shreveport
Dr. M. J. Rivenbark.....205 W. Main St., Haynesville
Dr. P. B. Salatich.....Maison Blanche Building, New Orleans
Dr. J. T. Sanders.....4414 Magnolia St., New Orleans
Dr. R. O. Simmons.....630 Washington Ave., Alexandria
Dr. J. G. Snelling.....320 North 3rd St., Monroe
Dr. A. H. Storck.....1458 Nashville Ave., New Orleans
Dr. G. J. Taquino.....1313 Canal Bank Building, New Orleans
Dr. C. H. Tyrone.....3503 Prytania St., New Orleans
Dr. E. B. Vickery.....American Bank Building, New Orleans
Dr. W. A. Wagner.....American Bank Building, New Orleans
Dr. H. W. E. Walther.....Whitney Bank Building, New Orleans
Dr. R. W. Wright.....Box 161, Winnfield

Junior Fellows

Dr. H. H. Hardy, Jr.....531 DeSota St., Alexandria
Dr. R. E. King.....Winnsboro
*Dr. C. H. Wilson

MISSISSIPPI

Senior Fellows

Dr. W. H. Anderson.....114 Main St., Booneville
Dr. E. E. Benoist.....Natchez Sanatorium, Natchez
*Dr. Maxwell D. Berman
Dr. J. A. K. Birchett, Jr.....Vicksburg Sanitarium, Vicksburg
Dr. T. H. Blake.....Standard Life Building, Jackson
Dr. W. H. Brandon.....P. O. Box 688, Clarksdale
Dr. E. A. Bush.....Box 557, Laurel
Dr. J. C. Culley.....Oxford
Dr. John Darrington.....Yazoo City
Dr. J. W. D. Dicks.....306 Franklin St., Natchez
Dr. F. S. Dixon.....Natchez Charity Hospital, Natchez
*Dr. M. Q. Ewing
Dr. R. J. Field.....P. O. Box 128, Centreville
Dr. S. E. Field.....P. O. Box 128, Centreville
Dr. P. L. Fite.....Columbus
Dr. M. L. Flynt.....2106 11th St., Meridian
Dr. H. A. Gamble.....Medical Arts Building, Greenville
Dr. A. E. Gordin.....121 N. President St., Jackson
Dr. W. W. Hall.....Shelby
*Dr. William F. Hand
Dr. A. C. Hewes.....Hewes Building, Gulfport
*Dr. R. D. Kirk, Jr.
Dr. I. C. Knox.....1600 Monroe St., Vicksburg
Dr. N. B. Lewis.....First National Bank Building, Vicksburg
Dr. J. W. Lipscomb.....Lamar Life Building, Jackson
Dr. L. W. Long.....Standard Life Building, Jackson
Dr. M. H. McRae.....1207 Gloster St., Corinth

*In active Military Service.

Dr. W. H. Parsons.....Vicksburg
Dr. V. B. Philpot.....Houston Hospital, Houston
Dr. F. E. Rehfeldt.....Jackson Infirmary, Jackson
Dr. H. L. Rush.....Rush's Infirmary, Meridian
Dr. L. V. Rush.....Box 606, Meridian
Dr. G. P. Sanderson.....Edwards
Dr. R. D. Sessions.....Natchez
Dr. H. R. Shands.....Lamar Life Building, Jackson
*Dr. M. M. Snelling
Dr. A. Street.....Vicksburg
Dr. G. M. Street.....The Street Clinic, Vicksburg
Dr. W. H. Sutherland.....Sutherland Clinic, Booneville
Dr. J. S. Ullman.....306 Franklin St., Natchez
Dr. M. B. Ware.....Standard Life Building, Jackson
Dr. F. E. Werkheiser.....Standard Life Building, Jackson

Junior Fellows

Dr. R. L. Clark, Jr.....Lamar Life Building, Jackson
Dr. T. E. Hall.....Belzoni
Dr. J. G. McKinnon.....Ross Building, Hattiesburg

NORTH CAROLINA

Senior Fellows

Dr. R. T. Bellows.....Professional Building, Charlotte
Dr. M. H. Biggs.....Rutherfordton
Dr. H. H. Bradshaw.....Wake Forest College, Winston-Salem
Dr. A. G. Brenizer.....Professional Building, Charlotte
Dr. H. L. Brockmann.....912 Fairway Drive, High Point
*Dr. J. S. Brown, Jr.
Dr. C. Z. Candler.....P. O. Box 215, Sylva
Dr. G. L. Carrington.....Alamance General Hospital, Burlington
*Dr. E. J. Cathell
Dr. D. B. Cobb.....401 N. Herman St., Goldsboro
Dr. G. C. Cooke.....226 Nissen Building, Winston-Salem
Dr. R. H. Crawford.....Rutherfordton
Dr. L. A. Crowell.....410 S. Aspen St., Lincolnton
Dr. R. T. Ferguson.....403 N. Tryon St., Charlotte
Dr. J. S. Gaul.....Professional Building, Charlotte
Dr. J. W. Gibbon.....Professional Building, Charlotte
Dr. C. F. Glenn.....Rutherfordton
Dr. T. V. Goode.....349 N. Center St., Statesville
Dr. W. L. Grantham.....Public Service Building, Asheville
*Dr. Parker C. Hardin
Dr. V. K. Hart.....106 West 7th St., Charlotte
Dr. E. R. Hipp.....412 N. Church St., Charlotte
*Dr. F. C. Hubbard
Dr. G. W. Joyner.....415 N. Fayetteville St., Asheboro
Dr. J. P. Kennedy.....Professional Building, Charlotte
Dr. W. J. Lancaster.....413 Shore Crest Drive, Tampa, Fla.
Dr. Maurice LeBauer.....101 N. Elm St., Greensboro
Dr. R. O. Lyday.....Jefferson Building, Greensboro
*Dr. W. F. Martin

*In active Military Service.

DR. M. S. MARTIN.....Martin Memorial Hospital, Inc., Mount Airy
DR. O. L. MILLER.....121 West 7th St., Charlotte
DR. J. A. MOORE.....Flat Iron Building, Asheville
*DR. W. B. MCCUTCHEON
DR. R. W. MCKAY.....121 West 7th St., Charlotte
DR. R. B. MCKNIGHT.....Professional Building, Charlotte
DR. K. P. NEAL.....309 Hillsboro St., Raleigh
DR. C. S. NORBURN.....346 Montford Ave., Asheville
DR. W. B. NORMENT.....101 N. Elm St., Greensboro
DR. H. H. OGBURN.....Jefferson Building, Greensboro
*DR. W. R. PITTS
DR. J. G. RAMSEY.....Tayloe Hospital, Washington
DR. J. F. ROBERTSON.....Masonic Temple Building, Wilmington
*DR. PAUL W. SANGER
DR. W. M. SCRUGGS.....301 Hawthorne Lane, Charlotte
DR. W. T. SHAVER.....Yadkin Hospital, Albermarle
DR. C. B. SQUIRES.....Professional Building, Charlotte
DR. C. V. TYNER.....Leaksville Hospital, Leaksville
DR. BAHNSON WEATHERS.....Box 308, Roanoke Rapids
DR. B. C. WILLIS.....503 Falls Road, Rocky Mount
DR. G. T. WOOD.....164 S. Main St., High Point
DR. C. A. WOODARD.....Woodard-Herring Hospital, Wilson

JUNIOR FELLOWS

*DR. I. E. HARRIS, JR.

SOUTH CAROLINA

SENIOR FELLOWS

DR. A. E. BAKER.....Baker Sanatorium, Charleston
DR. C. O. BATES.....135 S. Main St., Greenville
DR. H. S. BLACK.....392 E. Main St., Spartanburg
DR. S. O. BLACK.....392 E. Main St., Spartanburg
DR. T. E. BOWERS.....89 Rutledge Ave., Charleston
DR. W. A. BOYD.....1524 Pickens St., Columbia
*DR. A. J. BUIST, JR.
DR. A. JOHNSON BUIST.....279 Meeting St., Charleston
DR. G. H. BUNCH.....1404 Laurel St., Columbia
DR. A. F. BURNSIDE.....1512 Marion St., Columbia
DR. F. G. CAIN.....4 Vanderhorst St., Charleston
DR. J. H. CATHCART.....E. Frederick St., Gaffney
*DR. F. P. COLEMAN
DR. R. G. DOUGHTY.....1427 Pickens St., Columbia
DR. C. B. EARLE.....135 S. Main St., Greenville
*DR. C. H. FAIR
DR. L. ST. C. HAYS.....Clinton
DR. F. A. HOSHALL.....95 Rutledge Ave., Charleston
*DR. P. G. JENKINS
DR. DOUGLAS JENNINGS.....99 Market St., Bennettsville
DR. F. E. KREDEL.....Medical College, Charleston
DR. C. J. LEMMON.....132 N. Washington St., Sumter
DR. D. L. MAGUIRE.....187 Calhoun St., Charleston

*In active Military Service.

Dr. J. C. McLeod.....101 W. Cheves St., Florence
Dr. L. M. McMillan.....Mullins
Dr. C. A. Mobley.....31 Glover St., Orangeburg
Dr. A. T. Moore.....Gervais and Pickens Sts., Columbia
Dr. V. P. Patterson.....Pryor Hospital, Chester
Dr. J. J. Ravenel.....96 Ashley Ave., Charleston
Dr. G. S. Rhame.....1108 Fair St., Camden
Dr. J. S. Rhame.....81 Wentworth St., Charleston
Dr. J. A. Sasser.....Conway
Dr. C. J. Scurry.....431 Main St., Greenwood
Dr. S. B. Sherard.....Gaffney
*Dr. L. P. Thackston
Dr. W. P. Turner.....310 Maxwell Ave., Greenwood
Dr. J. W. White.....206 E. North St., Greenville
Dr. J. R. Young.....126 E. Earle St., Anderson

Junior Fellows

*Dr. Herbert Blake
Dr. Delmar O. Rhame.....Hays Hospital, Clinton
Dr. A. B. Whitaker.....522 E. DeKalb St., Camden

TENNESSEE

Senior Fellows

Dr. Herbert Acuff.....Medical Arts Building, Knoxville
*Dr. W. M. Adams
Dr. C. D. Allen.....1019 Madison Ave., Memphis
Dr. J. S. Anderson.....Bennie Dillon Building, Nashville
*Dr. C. H. Avent
Dr. T. P. Bagwell.....Medical Arts Building, Knoxville
Dr. L. D. Bennett.....Doctors Building, Nashville
Dr. G. D. Boone.....Nobles Memorial Hospital, Paris
Dr. H. A. Callaway.....Maryville
Dr. C. L. Chumley.....603 W. Main Ave., Knoxville
Dr. E. S. Clayton.....607 W. Main Ave., Knoxville
Dr. L. E. Coolidge.....Greeneville
Dr. K. C. Copenhaver.....Medical Arts Building, Knoxville
Dr. N. H. Copenhaver.....Central Building, Bristol
Dr. J. M. Dorris.....899 Madison Ave., Memphis
Dr. C. O. Foree.....Foree Hospital, Athens
Dr. W. E. Foree.....Foree Hospital, Athens
Dr. R. H. Foster.....U. S. Veterans Hospital, Memphis
Dr. J. H. Francis.....188 S. Bellevue, Memphis
Dr. J. C. Gardner.....Doctors Building, Nashville
Dr. L. K. Gibson.....200 E. Main St., Johnson City
Dr. V. H. Griffin.....Masonic Building, Clarksville
Dr. J. B. Haskins.....Medical Arts Building, Chattanooga
Dr. Victor Hill.....Doctors Building, Knoxville
*Dr. Spencer Johnson
Dr. E. G. Kelly.....899 Madison Ave., Memphis
Dr. H. A. Laws, Jr.....James Building, Chattanooga

*In active Military Service.

*Dr. J. H. Lesher
*Dr. A. D. Mason, Jr.
Dr. M. S. Lombard.....400 Federal Building, Spokane, Wash.
Dr. C. H. Long.....Hamilton Bank Building, Johnson City
Dr. T. H. Martin.....700 Church St., Nashville
Dr. J. W. McClaran.....426 E. Main St., Jackson
Dr. J. L. McGehee.....899 Madison Ave., Memphis
Dr. C. S. McMurray.....Doctors Building, Nashville
Dr. T. T. McNeer.....519 Holston St., Kingsport
Dr. R. L. McReynolds.....Medical Arts Building, Knoxville
Dr. Barton McSwain.....The New York Hospital, New York City
Dr. E. D. Mitchell, Jr.....1005 Com. Title Building, Memphis
Dr. T. D. Moore.....899 Madison Ave., Memphis
Dr. J. G. Moss.....216½ E. Main St., Johnson City
Dr. Francis Murphey.....899 Madison Ave., Memphis
Dr. C. E. Newell.....705 Walnut St., Chattanooga
Dr. E. T. Newell.....707 Walnut St., Chattanooga
Dr. Jarrell Penn.....Medical Arts Building, Knoxville
Dr. J. C. Pennington.....700 Church St., Nashville
Dr. H. D. Peters.....Medical Arts Building, Knoxville
Dr. Arthur R. Porter, Jr.....248 Madison Ave., Memphis
Dr. T. R. Ray.....Gunter Building, Shelbyville
Dr. W. G. Rhea.....Nobles Memorial Hospital, Paris
*Dr. E. L. Rippy
*Dr. P. B. Russell, Jr.
Dr. R. L. Sanders.....899 Madison Ave., Memphis
Dr. D. W. Smith.....Doctors Building, Nashville
Dr. J. S. Speed.....869 Madison Ave., Memphis
Dr. Albert Sullivan.....904 W. Main St., Dothan, Ala.
Dr. M. J. Tendler.....899 Madison Ave., Memphis
Dr. H. K. Turley.....Medical Arts Building, Memphis
Dr. R. G. Waterhouse.....Medical Arts Building, Knoxville
Dr. E. T. West.....Johnson City
Dr. M. C. Wiggins.....1930 East 4th St., Tucson, Arizona
Dr. E. G. Wood.....Medical Arts Building, Knoxville
Dr. B. W. Wright.....706 Church St., Nashville

Junior Fellows

Dr. G. D. Batten.....420 E. Main St., Jackson
Dr. W. T. Black, Jr.....899 Madison Ave., Memphis
Dr. J. H. Boles.....P. O. Box 548, McMinnville
Dr. J. B. Ely.....603 W. Main Ave., Knoxville
Dr. B. H. Marshall.....206 E. College St., Fayetteville
Dr. W. T. Satterfield.....919 E. McLemore Ave., Memphis
Dr. C. C. Smeltzer.....899 Madison Ave., Memphis
*Dr. J. J. Sohm
*Dr. R. C. Taylor
Dr. G. M. Trotter.....Medical Center Building, Knoxville
*Dr. J. E. Watson, Jr.

*In active Military Service.

VIRGINIA

Senior Fellows

Dr. O. T. Amory.....2901 West Ave., Newport News
Dr. C. J. Andrews.....Medical Arts Building, Norfolk
Dr. Horace G. Ashburn.....1301 Ohio St., South Norfolk
Dr. Elisha Barksdale.....Allied Arts Building, Lynchburg
Dr. R. P. Bell.....211 W. Frederick St., Staunton
Dr. P. W. Boyd.....212 W. Boscawen St., Winchester
Dr. W. R. Bracey.....118 E. Franklin St., Richmond
Dr. C. C. Coleman.....1200 E. Broad St., Richmond
Dr. J. D. Collins.....Medical Arts Building, Portsmouth
Dr. F. R. Crawford.....Dorothy May Building, Farmville
Dr. D. S. Daniel.....Johnston-Willis Hospital, Richmond
Dr. Paul Davis.....Lewis-Gale Hospital, Roanoke
Dr. R. M. DeHart.....New Altamont Hospital, Christiansburg
Dr. H. L. Denoon.....Nassawadox
*Dr. Charles J. Devine
Dr. D. S. Divers.....P. O. Box 568, Pulaski
Dr. B. A. Doggett.....Medical Arts Building, Norfolk
Dr. E. J. Morehead.....C. & O. Hospital, Clifton Forge
Dr. C. L. Fifer.....114 N. Washington St., Alexandria
Dr. Lomax Gwathmey.....220 W. Freemason St., Norfolk
*Dr. H. R. Hartwell
Dr. R. P. Hawkins, Jr.....Box 405, Clifton Forge
*Dr. M. A. Johnson, Jr.
Dr. F. S. Johns.....Johnston-Willis Hospital, Richmond
Dr. L. D. Keyser.....Medical Arts Building, Roanoke
Dr. L. A. McAlpine.....Professional Building, Portsmouth
Dr. J. M. Meredith.....1200 E. Broad St., Richmond
Dr. S. M. Michaux.....Stuart Circle Hospital, Richmond
*Dr. James A. Miller
Dr. J. C. Motley.....Abingdon
Dr. W. R. Payne.....91 29th St., Newport News
Dr. H. I. Pifer.....132 N. Braddock St., Winchester
Dr. W. A. Porter.....229 W. Bute St., Norfolk
Dr. J. L. Rawls.....Medical Arts Building, Norfolk
Dr. N. F. Rodman.....Medical Arts Building, Norfolk
Dr. G. W. Schenck.....Medical Arts Building, Norfolk
Dr. A. M. Showalter.....Christiansburg
Dr. C. C. Smith, Jr.....142 W. York St., Norfolk
*Dr. M. H. Todd
Dr. W. R. Whitman.....Lewis-Gale Hospital, Roanoke

Junior Fellows

*Dr. Leslie M. Bell
Dr. Ray H. Grubbs.....Christiansburg
*Dr. J. Stuart Staley

*In active Military Service.

WEST VIRGINIA

Senior Fellows

Dr. R. B. Bailey.....Wheeling Clinic, Wheeling
*Dr. Spencer L. Bivens
Dr. R. K. Buford.....Atlas Building, Charleston
Dr. G. W. Easley.....Memorial Hospital, Williamson
Dr. R. H. Edwards.....Stevens Clinic Hospital, Welch
Dr. Welch England.....1009 Market St., Parkersburg
Dr. R. D. Gill.....Wheeling Clinic, Wheeling
Dr. M. A. Gilmore.....Box 172, Parkersburg
Dr. S. S. Hall.....Empire Bank Building, Clarksburg
*Dr. Lewell S. King
Dr. W. R. Laird.....Laird Memorial Clinic, Montgomery
*Dr. A. R. Lutz
Dr. R. B. Miller.....920 Market St., Parkersburg
Dr. H. C. Myers.....210 N. Walnut St., Philippi
Dr. J. C. Pickett.....Monongahela Building, Morgantown
Dr. M. H. Porterfield.....219 W. Burke St., Martinsburg
Dr. J. O. Rankin.....Wheeling Clinic, Wheeling
Dr. H. V. Thomas.....Empire Bank Building, Clarksburg
Dr. T. E. Vass.....714 Edgewood Road, Bluefield
*Dr. R. S. Widmeyer
Dr. R. J. Wilkinson.....1119 6th Ave., Huntington

Junior Fellows

*Dr. William L. Haltom
Dr. R. W. Lukens.....58 14th St., Wheeling
*Dr. Junior W. Myers
Dr. C. O. Post.....225 W. Main St., Clarksburg
Dr. J. N. Reeves.....Oak Hill Hospital, Oak Hill
Dr. D. E. Sauer.....P. O. Box 105, Kingwood
Dr. W. W. Scott.....Memorial Hospital, Williamson
Dr. R. R. Summers.....147 Hunt St., Morgantown
Dr. J. H. Trotter.....244 Pleasant St., Morgantown
Dr. J. F. Williams.....Goff Building, Clarksburg

*In active Military Service.

ROSTER

of

THE TEXAS SURGICAL SOCIETY

1 9 4 2

OFFICERS

DR. T. H. THOMASON, *President*
Fort Worth

DR. J. G. BURNS, *First Vice-President*
Cuero

DR. E. W. COYLE, *Second Vice-President*
San Antonio

DR. WALTER STUCK, *Secretary*
San Antonio

DR. ELBERT DUNLAP, *Treasurer*
Dallas

DR. C. S. VENABLE, *Council*
San Antonio

DR. G. W. N. EGGERS, *Recorder*
Galveston

HONORARY MEMBERS

DR. H. M. DOOLITTLE.....4105 Live Oak St., Dallas
DR. D. S. WEIR.....390 Pearl St., Beaumont

SENIOR FELLOWS

DR. C. M. AVES.....908 Dallas Ave., Houston
DR. K. H. AYNESWORTH.....121 South 6th St., Waco
DR. FRANK L. BARNES.....1704 Crawford St., Houston
DR. FRANK C. BEALL.....1212 W. Lancaster Ave., Fort Worth
DR. G. V. BRINDLEY.....213 West Avenue G. Temple
DR. J. E. CLARKE.....1215 Walker Ave., Houston
DR. C. W. FLYNN.....1719 Pacific Ave., Dallas
DR. JOHN T. MOORE.....1215 Walker Ave., Houston
DR. R. R. ROSS.....414 Navarro St., San Antonio
DR. W. B. RUSS.....205 Camden St., San Antonio
DR. M. B. STOKES.....1625 Main St., Houston
DR. B. WEEMS TURNER.....506 Caroline St., Houston
DR. C. S. VENABLE.....414 Navarro St., San Antonio
DR. J. M. VENABLE.....414 Navarro St., San Antonio

ACTIVE FELLOWS

DR. J. P. BARNES.....1704 Crawford St., Houston
DR. E. W. BERTNER.....806 Main St., Houston
DR. P. W. BEST.....1215 Walker Ave., Houston
DR. PHILIP A. BLEAKNEY.....119 South A St., Harlingen
*DR. T. G. BLOCKER

---

* In active Military Service.

Dr. John L. Bradfield.....1719 Pacific Ave., Dallas
Dr. E. P. Bunkley.....Stamford
Dr. J. Gillette Burns.....Cuero
Dr. C. C. Cade.....414 Navarro St., San Antonio
*Dr. Elbert H. Caldwell
Dr. W. B. Carrell.....3701 Maple Ave., Dallas
*Dr. C. B. Carter
Dr. Harry W. Cochran.....1719 Pacific Ave., Dallas
Dr. R. E. Cone.....324 21st St., Galveston
Dr. Willard R. Cooke.....2202 Avenue M, Galveston
Dr. A. G. Cowles.....205 Camden St., San Antonio
Dr. Edwin W. Coyle.....414 Navarro St., San Antonio
Dr. Robert W. Crosthwait.....425 Austin Ave., Waco
Dr. William L. Crosthwait.....425 Austin Ave., Waco
*Dr. James Emerson Dailey
Dr. John Ernest Daly.....602 West 10th St., Fort Worth
Dr. Albert D'Errico.....1719 Pacific Ave., Dallas
Dr. Sim Driver.....3701 Maple Ave., Dallas
Dr. John W. Duckett.....4105 Live Oak, Dallas
Dr. Elbert Dunlap.....1719 Pacific Ave., Dallas
Dr. G. W. N. Eggers.....2201 Avenue D, Galveston
Dr. George R. Enloe.....650 5th St., Dallas
Dr. A. I. Folsom.....1719 Pacific Ave., Dallas
Dr. Joe B. Foster.....1316 Walker Ave., Houston
Dr. Charles Gates.....806 Main St., Houston
Dr. Joe Gilbert.....120 West 7th St., Austin
Dr. Joe Thorn Gilbert.....120 West 7th St., Austin
Dr. G. F. Goff.....3601 Cedar Springs Road, Dallas
Dr. John V. Goode.....1719 Pacific Ave., Dallas
Dr. J. W. Goode.....205 Camden St., San Antonio
Dr. F. C. Goodwin.....109 N. Oregon St., El Paso
Dr. C. C. Green.....1209 Rosalie St., Houston
Dr. James Greenwood, Jr.....1215 Walker Ave., Houston
Dr. A. L. Hathcock.....105½ W. Oak St., Palestine
Dr. Herbert T. Hayes.....1215 Walker Ave., Houston
Dr. Harry G. Heaney.....416 Chapparal St., Corpus Christi
*Dr. William H. Heck
Dr. A. Philo Howard.....1624 Main St., Houston
Dr. W. Lee Hudson.....1719 Pacific Ave., Dallas
*Dr. Hub E. Isaacks
Dr. Dudley Jackson.....414 Navarro St., San Antonio
*Dr. Peter M. Keating
*Dr. H. L. D. Kirkham
Dr. J. Allen Kyle.....806 Main St., Houston
Dr. Q. B. Lee.....1300 8th St., Wichita Falls
Dr. G. D. Mahon.....1719 Pacific Ave., Dallas
Dr. Joe H. McGuire.....1719 Pacific Ave., Dallas
Dr. H. W. McKnight.....103 East 7th St., Fort Worth
Dr. Allen L. McMurrey.....1215 Walker Ave., Houston
Dr. Felix P. Miller.....109 N. Oregon St., El Paso
*Dr. J. T. Mills
*Dr. R. M. Moore

* In active Military Service.

Dr. Paul C. Murphy.....1422 Austin Ave., Waco
Dr. C. C. Nash.....1719 Pacific Ave., Dallas
Dr. P. I. Nixon.....705 E. Houston St., San Antonio
Dr. H. A. O'Brien.....1719 Pacific Ave., Dallas
Dr. Gustav Pagenstecher.....414 Navarro St., San Antonio
Dr. F. L. Paschal.....414 Navarro St., San Antonio
Dr. Henry A. Petersen.....1215 Walker Ave., Houston
Dr. J. E. Pittman.....1215 Walker Ave., Houston
Dr. T. A. Pressly.....205 Camden St., San Antonio
*Dr. Cornelius Pugsley, Jr.
Dr. Lloyd I. Ross.....705 E. Houston St., San Antonio
Dr. Curtice Rosser.....1719 Pacific Ave., Dallas
*Dr. Stirling Russ
Dr. A. C. Scott, Jr.....213 West Avenue G, Temple
Dr. C. E. Scull.....414 Navarro St., San Antonio
Dr. Frank Selecman.....1719 Pacific Ave., Dallas
Dr. Robert R. Shaw.....1719 Pacific Ave., Dallas
Dr. M. W. Sherwood.....213 West Avenue G, Temple
Dr. C. M. Simpson.....213 West Avenue G, Temple
Dr. A. O. Singleton.....320 21st St., Galveston
*Dr. Andrew Small
Dr. Edwin T. Smith.....1215 Walker Ave., Houston
Dr. Howard O. Smith.....Marlin
Dr. S. R. Snodgrass.....John Sealy Hospital, Galveston
Dr. F. L. Snyder.....602 West 10th St., Fort Worth
Dr. Walter G. Stuck.....414 Navarro St., San Antonio
Dr. Judson L. Taylor.....1215 Walker Ave., Houston
Dr. W. C. Tenery.....Waxahachie
Dr. Thomas H. Thomason.....1212 W. Lancaster Ave., Fort Worth
*Dr. W. B. Thorning
Dr. Victor Tucker.....414 Navarro St., San Antonio
Dr. George W. Waldron.....1215 Walker Ave., Houston
Dr. Samuel D. Weaver.....1719 Pacific Ave., Dallas
Dr. Edward White.....1719 Pacific Ave., Dallas
Dr. R. J. White.....810 Houston St., Fort Worth
Dr. Harriss Williams.....120 West 7th St., Austin

*In active Military Service.

CHEMICAL TRANSFORMATION OF THE IODINE FIXED BY THE THYROID GLAND

WALTER MANN, B. S.
CHARLES P. LEBLOND, M. D.
Rochester, New York

THE thyroid gland has the ability to withdraw iodine from the blood stream and to transform it into the active hormone, thyroxine. The ability of the thyroid to "fix" iodine was first demonstrated by Marine and his co-workers[24, 26, 27]. They showed that even the perfused thyroid gland is able to collect iodine from the perfusion fluid[25, 30]. Recently four groups of workers in Boston, Berkeley, Paris, and Rochester, using radioactive iodine, confirmed the specific fixation of iodine by the gland[1, 7, 8, 9, 11, 12, 13, 17, 18, 19]. Using radioactive iodine as a tracer, it seems possible to determine whether the chemical transformations of the iodine fixed by the gland can be influenced by the injection of either a small or a large dose of iodine.

I. FATE OF IODINE IN THE THYROID AFTER INJECTION OF MINUTE (SUB-PHYSIOLOGIC) DOSES OF THIS ELEMENT.

Using radioactive iodine it is possible to follow the fate of very small doses of iodine in the body. Samples of radioactive iodine can be prepared in such a way as to contain so little iodine that it cannot be detected by chemical methods, although it can be measured by physical means. These small amounts of iodine will be representative of the behaviour of the minute quantities of iodine absorbed in the normal conditions of alimentation.

The thyroid gland appears to contain iodine only in three different chemical forms: (1) a small proportion of inorganic iodine accounts for about 10 per cent of the total thyroid iodine; (2) thyroxine, representing about 25 per cent of the thyroid iodine; and (3) the remnant of the iodine in the gland being present as diiodotyrosine[10]. It is assumed that thyroxine and diiodotyroxine, as amino acids, share in the formation of the proteic molecule of thyro-

---

From the Departments of Radiology and Anatomy of the University of Rochester School of Medicine and Dentistry, Rochester, New York. Submitted for the Van Meter Prize, 1942.

The American Association for the Study of Goiter annually offers the Van Meter Prize of Three Hundred Dollars for the best essay submitted concerning original work on the problems related to the Thyroid Gland. The prize essay this year was written by Mr. Walter Mann and Dr. Charles P. Leblond and appears in this issue of THE SOUTHERN SURGEON, by special permission.

The Goiter Association will publish no Transactions this year as our annual meetings have been discontinued for the duration.—T. C. DAVISON, Corresponding Secretary.

Dr. Leblond is now at the Department of Anatomy, McGill University, Montreal, Canada.

globulin. Harington and Barger, because of the similarity in structure between diiodotyrosine and thyroxine, suggested that the former is the precursor of thyroxine in the thyroid. The formation of thyroxine from diiodotyrosine has been demonstrated in vitro by von Mutzenbecher[31] and confirmed by Block[4] when an alkaline solution of diiodotyrosine is incubated at 37° C.

Since radioactive iodine injected in sub-physiologic amounts will behave in the body as does the iodine normally present, it will have a tendency to distribute itself in the various thyroid fractions in the same manner as the chemical iodine continuously entering the gland. Thus the amount of total iodine found in the various iodine fractions of the gland is the consequence of an equilibrium resulting from the chemical reactions occurring in the gland. It is possible that all these reactions be simultaneous, so that each time some iodine enters the gland, it is distributed in the iodine fractions

TABLE 1.

Influence of the Injection of Various Doses of Iodine on the Percentage of the Dose Entering the Thyroid.

Dose of iodine injected 100 gm. of (in mg. per body weight)	Maximum concentration of radio-iodine (mg. per 100 gr. in the thyroid of tissue)	Percentage of injected dose entering the thyroid	Time required for maximum fixation by the thyroid
5	23	0.08%	5 min.
0.5	16	0.30%	5 min.
0.01	7	5.30%	24 hours
infinitesimal (radio-iodine without carrier)	..	34.70%	48 hours

of the thyroid in the same proportion as revealed by titration of total iodine in each fraction. Perlman, Morton, and Chaikoff[29] have been the first to examine the fate of sub-physiologic amounts of iodine in the thyroid. After injection of radioactive iodine without extra iodine being added as a carrier, they measured the radioactivity of each thyroid fraction and concluded that the proportion of radioactive iodine in each one remains fairly constant at each time interval. This implied that all the reactions taking place in the gland are simultaneous. If this were the case, the radioactive iodine should be deposited as iodide, diiodotyrosine, or thyroxine in the same proportion as is found by chemical titration of total iodine in each of these fractions. In this case the ratio of the radioactive iodine (I^{130}) to chemical iodine (I^{127}), that is to say, the quantity of radioactivity per gram of iodine or specific radioactivity, would be the same in all thyroid fractions after iodine injection.

It is much more likely that the reactions resulting in the formation of thyroxine and diiodotyrosine do not take place simultaneously. In these conditions the iodine fraction which is first formed or appears soon after the administration of the radioactive iodine should have the highest proportion of radioactivity, that is to say, a higher specific radioactivity. Later on, the proportion of radioactivity should rise in the other fractions as they are synthesized.

Measuring the radioactive iodine (I^{130}) and determining the chemical iodine (stable isotope I^{127}) from one-half to 48 hours after the injection of I^{130} without carrier, we can arrive at the specific radioactivities which are indicative of the normal relative rates of turnover of inorganic iodine, diiodotyrosine, and thyroxine in the thyroid gland. It is assumed in this type of experiment that the total combined iodine values (inorganic and organic) for both I^{127} and I^{130} remain constant for a particular animal under normal conditions, since this level should not be disturbed by the extremely small amount (sub-physiologic) of radioactive iodine injected.

Method

Radioactive iodine was prepared by the proton bombardment of tellurium in the cyclotron, resulting in a product in which the isotope with a half-life of 12.6 hours (I^{130}) was predominant. Radioactive iodine without carrier was separated from tellurium by oxidation with a chromic-sulfuric acid mixture, reduction with phosphorus acid and distillation, according to Matthews, Curtis, and Brode's modication[28] of the Leipert procedure[20] for microdetermination of iodine. The radioactive iodine was collected in the alkaline medium, evaporated to a suitable volume and partially neutralized with phosphoric acid to pH 7.5 and 8.0. The radioactive iodine was thus obtained as iodide presumably suitable for intravenous injection.

Six adult dogs, weighing between 20 and 40 kilograms each, received an injection of 10 c.c. of radioactive iodine solution (containing practically no I^{127}), into the saphenous vein of the hind leg. At intervals of one-half, eight, and 48 hours after the injection the animals were sacrificed by illuminating gas. The thyroid glands were trimmed, cut into small pieces, and dried in the chamber of a Fisher-Abderhalden drier at a temperature of 79.0° C. first for one hour, then removed and homogenized, and returned to the chamber which was then connected to a "hyvac" pump until a constant weight of tissue was obtained.

Aliquots were then taken for the total inorganic and thyroxine iodine determinations (both I^{130} and I^{127}). Inorganic iodine was

separated by the water extraction method according to Gutman et al[5]. As an added precaution against the possibility of extracting small amounts of protein containing iodine, trichloracetic acid was added to the solution obtained after centrifugation. Traces of precipitate were obtained which contained insignificant amounts of radioactivity. The solution was then ashed and distilled according to the method of Matthews, Curtis, and Brode[23]. The distillate obtained was evaporated and made up to volumes of 10 or 25 c.c. depending upon the radioactivity content of the sample. Two c.c. of this volume were taken for radioactivity determinations by means of the dipping Geiger-Muller counter according to Bale[2]. The remainder of the solution was then analyzed as usual for the determination of I^{127} [28].

Thyroxine was separated by the butyl alcohol extraction procedure according to Blau[3]. After reduced pressure distillation to remove the butyl alcohol, the residue obtained was ashed and treated in the same manner as was the inorganic iodine. Total iodine was determined by treating an aliquot of desiccated thyroid in the same manner as were the aliquots measured for inorganic iodine and thyroxine after their separation, ashing, etc. Harington[1] has demonstrated that diiodotyrosine and thyroxine account for all of the organic iodine. Therefore, the iodine remaining after the *inorganic iodine* and *thyroxine* iodine were subtracted from the total iodine was considered the iodine of diiodotyrosine and is so designated in the rest of this paper. The determinations were made in duplicate and also performed in the residue of the two extractions.

Discussion

The results (table 2) indicated a rise in the total quantity of radioactive iodine fixed in the gland throughout the three periods of observation to the highest level at 48 hours, in confirmation of the results reported by Perlman and co-workers[29].

In order to study the rate of formation or turnover of inorganic and organic iodine, it is necessary to compare the values for I^{130} with the values for I^{127} in each of the compounds studied. This was done by dividing the per cent of injected I^{130} by the amount of I^{127} present in the same iodine fractions. The value thus obtained or "specific radioactivity" permits the comparison of the rate of formation of the different fractions in the same animal, but does not allow direct comparisons with similar ratios obtained in other normal animals. This is due to variations in the proportion of radioactivity in the total iodine fraction in various animals, supposedly because of the concentrations of iodine (I^{127}) in the blood and thyroid iodine fractions varies greatly in different animals. Since

TABLE 2.

RATES OF TURNOVER OF INORGANIC IODINE, DIIODOTYROSINE, AND THYROXINE IN THYROID GLANDS

All determinations were made in duplicate. The figures italicized represent the relative specific radioactivities.

Time	No. of dogs	Total			Iodide			Diiodotyrosine			Thyroxine		
		Radioactive % Iodine	Chemical Iodine	Specific radioact. x 100.	Radioactive % Iodine	Chemical Iodine	Specific radioact. x 100.	Radioactive % Iodine	Chemical Iodine	Specific radioact. x 100.	Radioactive % Iodine	Chemical Iodine	Specific radioact. x 100.
½	15	8.2	863.0	0.96 *1.00*	0.27	43.7	0.67 *0.66*	7.6	652.7	1.17 *1.27*	0.30	166.6	0.18 *0.19*
	14	15.2	420.5	3.56 *1.00*	3.30	54.0	0.61 *0.17*	11.3	265.0	5.30 *1.46*	0.40	96.0	0.47 *0.13*
8	10	12.2	1966.0	0.62 *1.00*	0.82	165.0	0.50 *0.80*	10.3	1158.0	0.89 *1.43*	1.00	643.0	0.18 *0.29*
	11	17.6	1366.0	1.29 *1.00*	1.30	145.0	0.87 *0.68*	15.3	807.0	1.90 *1.49*	1.00	364.0	0.24 *0.19*
48	12	47.0	1637.0	2.87 *1.00*	1.50	232.0	0.69 *0.24*	43.2	1299.0	3.31 *1.15*	2.40	106.0	2.59 *0.90*
	9	21.9	676.0	3.19 *1.00*							2.20	65.6	3.42 *1.07*
8	13	00.9	2810.0	0.30 *1.00*	0.65	555.0	0.12 *3.89*	27.0	2139.0	0.01 *0.42*	0.01	116.2	0.01 *0.22*

the distribution of radioactive iodine has a tendency to realize that of chemical iodine, there must be for each fraction a time when the "specific radioactivity" is equal to the specific radioactivity in the total gland. In this case, the ratio of the specific radioactivity of one fraction over that of the total bland is equal to one. These ratios or "relative specific radioactivities" indicate how far from the equilibrium, figured by the number "1", each fraction is at any given time in any animal. Therefore, direct comparison may now be made among the values obtained in the case of one animal or animals with others, and permits graphing of the values. The "relative specific radioactivities" were recorded below the "specific radioactivities" in table 2.

The results in that table showed first that the specific radioactivities of the various iodine fractions in any given animal were very different from one another. This demonstrated that the various iodine fractions in the thyroid were not formed simultaneously, contrary to the interpretation of Perlman and co-workers[29]. The table shows that during the whole experiment the radioactive iodine was in the highest proportion in the diiodotyrosine fraction. In the thyroxine fraction the specific radioactivity gradually increased to reach equilibrium toward the 48th hour after injection. In the inorganic iodine fraction the results, although not as clear cut as in other cases, suggested that an equilibrium was reached soon before or soon after the 8th hour after the injection.

The high relative specific radioactivity in diiodotyrosine showed definitely that this compound was the first to appear in the thyroid gland. This situation is rather contrary to our expectation and is worthy of some discussion. Since the radioactive iodine was administered intravenously in the form of iodide, and very soon penetrated into the extracellular fluid of the thyroid gland, a situation must exist soon after administration wherein the specific radioactivity of iodide in the extracellular fluid of the thyroid gland was very high in relation to the specific radioactivity of the iodide inside of the thyroid cell. Since we measured the sum of the iodide inside of the thyroid, contained in both the extracellular space and the thyroid cells, a high value in the relative specific radioactivity of iodide in the extracellular space might well be hidden. If we assumed that all of the diiodotyrosine containing I^{130} has been newly manufactured (no exchange)[18,29], then the findings of the high values at one-half hour for diiodotyrosine (three times that of iodide) indicated that the recently arrived inorganic I^{130} in the thyroid cell apparently could not have contributed in any great part to the iodine (I^{130}) which is part of the diiodotyrosine molecule, for if it

did the specific radioactivity of the iodide should be higher or at least as high as that in the diiodotyrosine fraction.

Another possibility arose. Previous to one-half hour, the iodide specific radioactivity might have been very high and was decreasing at a half hour, and more subsequently. Inspection of Table 1 shows that this possibility is incompatible with the findings, for iodide relative specific radioactivity is increasing between one-half and eight hours. It is rather inconceivable that the relative specific radioactivity of iodide was very high previous to one-half hour, then fell rapidly, and then rose again. Therefore, most of the inorganic iodide coming from the interstitial fluid and part of which may be destined to enter the thyroid cell as iodide, must be transformed immediately into diiodotyrosine before it is incorporated into the cells. Most likely this transformation took place at the level of the cell membrane. Two other alternative explanations may be examined: 1) the reaction might take place in the extracellular fluid of the thyroid. This was unlikely because of the lack of specificity of extracellular fluids in general; 2) diiodotyrosine might come to the thyroid already made by some other tissue or organ. This seemed highly improbable in view of previous results indicating that diiodotyrosine as such does not enter the thyroid gland[18].

The fact that the relative specific radioactivities of diiodotyrosine in the 30-minute animals were many times greater than those found for thyroxine indicated that diiodotyrosine synthesis preceded thyroxine synthesis but did not necessarily mean that diiodotyrosine was a thyroxine precursor. That diiodotyrosine was a thyroxine precursor was demonstrated, however, by the additional evidence that there was practically a linear increase in the relative specific radioactivity of thyroxine throughout the period of time studied, to a magnitude which finally is relatively high. This means that the thyroxine originated from a compound having a high relative specific activity which has been maintained practically constant during this time. Inspection of Table 1 indicated that the relative specific radioactivity values of diiodotyrosine fulfilled this requirement although the possibility that a small fraction of the total thyroxine formed may arise in another manner is not excluded.

From these data it is possible also to obtain some information concerning the absolute rate of formation or turnover of thyroxine. Hevesy and Hahn[14] have pointed out that the rate of formation of a substance can only be measured by the ratio of its specific radioactivity to the specific radioactivity of its precursor, and that the specific radioactivity of the latter must be kept constant. This ratio times 100 is equal to the per cent of the substance formed. An additional condition must be fulfilled, however, in order that the value

be valid, namely, an insignificant amount or none of the radioactive compound must be removed. Since the relative specific radioactivity of diiodotyrosine apparently has remained more or less constant for most of the 48 hour period, and since not much "radioactive" thyroxine has been removed from the thyroid, (otherwise the thyroxine curve would have a curvature which would be concave facing the abscissa), an approximate value for the rate of formation of thyroxine can be obtained. Using an average diiodotyrosine relative specific radioactivity of 1.3, 1.55 per cent of the thyroxine is formed per hour.

II. Rate of Iodine in the Thyroid After Injection of Large Doses of This Element (5 mg. per kg. of body weight).

The only relevant experiment on this subject was performed by Marine and Rogoff[26, 27]. They removed one lobe of the thyroid in dogs and injected 50 mgr. of iodine intravenously. At various intervals after this injection, they removed the other lobe and found that the samples of glands taken at 20 hours following the injection were more active on tadpole metamorphosis than the lobes examined before injection. They concluded that the newly fixed iodine was rapidly transformed into thyroid hormone. One may also mention there the reports on chemical analyses of human goiters surgically removed after iodine treatment. Kocher[15] states that in these conditions the inorganic iodine, and to a lesser extent, thyroglobulin iodine were increased. The contributions of Lunde and Wulfert[21], Merke[28], and Wheeler[32] on this subject were rather contradictory. The recent use of good chemical methods for the separation of inorganic iodine and thyroxine enabled Gutman, Benedict, Baxter, and Palmer[5] to show that iodine treatment of hyperthyreotic glands produced a marked increase of inorganic iodine with a smaller increase in thyroxine and diiodotyrosine. However, these results were variable and complicated by the hyperfunction of the gland and by the prolonged administration of iodine. Hence it was hoped that clear cut results could be obtained by the injection of a single large dose of iodine to normal animals. The iodine was labelled by the isotopes I^{128}, with a half-life of 25 minutes, or I^{131}, with a half-life of 8 days.

In the experiments with the short-life isotope, the thyroid was fractionated for separate estimation of inorganic iodine and thyroglobulin. The radioactive iodine was prepared by the bombardment of ethyl-iodide with radon-beryllium neutrons in the cyclotron. The radioactive iodine was extracted as HI by H_2S and then neutralized into NaI. The doses of iodine were adjusted so that the guinea pigs

used in this experiment received 0.5 mg. of iodine per 100 gm. of body weight. The injection was performed into the heart. Thirty minutes after the injection, the animals were sacrificed by bleeding. Estimation of radioactivity was made by the dry method. In order to facilitate the chemical separation of the radioactive iodine present in the gland as iodide or thyroglobulin, carriers were added before fractionation. As a carrier of thyroglobulin, four or five thyroids of untreated guinea pigs were finely ground in a mortar along with the thyroid of the injected animal. To this mixture were added four drops of a solution furnishing 20 mg. of iodide to carry the radioactive iodine present in the form of inorganic iodine.

The first method used for separation of the iodide and thyroglobulin was derived from Baumann's original procedure. The ground thyroid tissue with carriers was boiled for 10 minutes with 25 c.c. of 95 per cent alcohol. A filtration eliminated some inert material, while all of the radioactive fraction went into the filtrate. The latter was evaporated to near siccity. The residue dissolved in N_{10} NAOH, was precipitated with 15 per cent trichloracetic acid. In this precipitate, which included the thyroglobulin, there was an average of 10 per cent of the total radioactivity in the thyroid. The remnant of the activity is in the solution where it can be precipitated out by acid silver-nitrate. It is therefore inorganic iodine.

These results were confirmed by dialysis experiments with a parchment membrane. Thyroids from guinea pigs treated with radioactive iodine were ground as above, after the addition of 10 c.c. of water, and were then dialized against distilled water. Every 10 minutes some inactive NaI (I^{127}) was added to the thyroid mash in order to carry the radioactive iodide out of the dialyser. Because of the short life of I^{128}, this experiment could not be prolonged for over one hour. It was possible to recover over 60 per cent of the radioactivity in the distilled water outside of the dialyser. This activity could be precipitated out by adjunction of acid silver nitrate. It was therefore in the form of iodide.

In the third series of experiments, an electrolytic method was used. This ground thyroid was brought to a pH of 3 with HI. The two electrodes were made of brass plates (2 cm. x 5 cm.) maintained parallel and facing each other at a distance of 1 cm. Every three minutes, the brass plates were removed and their radioactivity was measured, while the electrolysis was continued with a new set of plates. By this method as much as 75 per cent of the activity was sometimes found at the positive pole with the ionized iodine, and only 5 per cent at the negative pole where the thyroglobulin went. As a rule, however, the losses were more consider-

able but the ratio of the radioactivities at each plate remained the same.

From all these experiments it may be concluded that a high percentage of the radioactivity fixed in the thyroid after injection of a large dose of radioactive iodine enters the gland as iodide. However, since a 25 minute isotope was used in these experiments, it was necessary to sacrifice some accuracy for the sake of speed. It was decided to check on these results by the use of a long life isotope (I^{131}) using the slow but more accurate modern methods for the separation of inorganic iodine[3, 4] and for thyroxine[2]. The I^{131} was prepared by the cyclotron of the Massachusetts Institute of Technology (Dr. R. Evans). Injection of a dose of 5 mgr. per kg. of body weight was performed intravenously in the dog. An interval of 8 hours was left between the injection and the sacrifice of the animal. In these conditions, 70 per cent of the radioactive iodine in the thyroid was in inorganic form, 1 per cent was as thyroxine, and the rest was as diiodotyrosine. The specific radioactivity was maximum in the iodide, namely I^{127}, and higher in the diiodotyrosine[17] than in the thyroxine[8].

All these results leave no doubt that after the injection of a large dose of iodine, the thyroid accumulates iodine in the form of iodide. Thus there seems to exist in the thyroid gland two mechanisms for the concentration of iodine: (1) by way of rapid formation of diiodotyrosine which predominates when extremely small doses of iodine are given; and (2) by way of a selective uptake of inorganic iodine which predominates when large doses of iodine are given.

The relative specific radioactivities of diiodotyrosine in the case of the large dose of iodine administered shows that there is certainly a much smaller proportion of the dose which is transformed into diiodotyrosine and consequently into hormonal iodine. Thus relative to the large dose administered, there is a much slower transformation into hormonal iodine.

Conclusions

The fate of iodine in the thyroid gland has been examined in normal animals in two different conditions: (1) in dogs receiving very small amounts of iodine comparable to the minute quantities of this element present in the food of man; and (2) animals receiving a fairly large dose of iodine comparable to the amounts administered in medical therapeutics.

1. In physiologic conditions the iodide coming from the blood stream accumulates in the thyroid gland mainly as diiodotyrosine.

The diiodotyrosine fraction is the natural precursor of thyroxine. The results indicate that 1.55 per cent of the thyroxine contained in the thyroid gland is formed per hour.

2. Whereas when excessive doses of iodine comparable to those used in medical practice are administered to an animal, the iodine is incorporated in the gland probably as stored iodide. In relation to the large dose administered the proportion which is transformed into diiodotyrosine is much smaller than in the case of small dose administration.

REFERENCES

1. Ariel, I.; Bale, W. F.; Downing, V.; Hodge, H. C.; Mann, W.; Van Voorhis, S.; Warren, S. L., and Wilson, H. F.: Distribution of Radioactive Isotopes of Iodine in Normal Rabbits, Am. J. Physiol. *132:* 346-350 (March) 1941.
2. Bale, W. F.; Haven, F., and LeFebre, M.: Apparatus for the Rapid Determination of Beta ray activity in Solutions, Rev. Scient. Instruments *10:* 193 (June) 1939.
3. Blau, Nathan: The Determination of Thyroxine in Thyroid Substance, J. Biol. Chem. *110:* 351-363 (July) 1935.
4. Block, Paul Jr.: A Note on the Conversion of Diiodotyrosine into Thyroxine, J. Biol. Chem. *135:* 51-52, (Aug.) 1940.
5. Gutman, A. B.; Benidict, E. M.; Baxter, B.; and Palmer, W. W.: The Effect of Administration of Iiodine on the Total Iodine, Inorganic Iodine and Thyroxine Content of the Pathological Thyroid Gland, J. Biol. Chem. *97:* 303-324 (July) 1932.
6. Gutman, A. B.; Sloan, L. W.; Gutman, E. B., and Palmer, W. W.: The Role of Diiodotyrosine in Hyperthyroidism, J. A. M. A. *101:* 256-259 (July) 1933.
7. Hamilton, J. G., and Soley, M. H.: Studies in Iodine Metabolism by Use of New Radioactive Isotope of Iodine, Am. J. Physiol. *127:* 577-572 (Oct.) 1939.
8. Hamilton, J. G., and Soley, M. H.: Studies in Iodine Metabolism of Thyroid Gland in Situ by Use of Radio-Iodine in Normal Subjects and in Patients with Various Types of Goiter, Am. J. Physiol. *131:* 135-143 (Nov.) 1940.
9. Hamilton, J. G., and Soley, M. H.: Comparison of Metabolism of Iodine and of Element 85 (Eka-Iodine), Proc. Nat. Acad. Sc. *26:* 483-489 (Aug.) 1940.
10. Harington, C. R.: The Thyroid Gland, London, Oxford University Press, 1933, page 91.
11. Hertz, S.: Radioactive Iodine as an Indicator in Thyroid Physiol: Observations on Rabbits and on Goiter Patients, J. Applied Physics *12:* 313-314 (April) 1941.
12. Hertz, S.; Roberts, A., and Evans, R. D.: Radioactive Iodine as Indicator in Study of Thyroid Physiology, Proc. Soc. Exper. Biol. Med. *38:* 510-513 (May) 1938.
13. Hertz, S.; Roberts, A.; Means, J. H., and Evans, R. D.: Radioactive Iodine as Indicator in Thyroid Physiology: Iodine Collection by Normal and Hyperplastic Thyroids in Rabbits, Am. J. Physiol. *128:* 565-576 (Feb.) 1940.
14. Hevesy, G., and Hahn, L.: Turnover Rates of Lecithin and Sphingomyelin, K. Kanske Vidensk, Selsk., Biol. Med. *15:* 5, 1940.
15. Kocher, A.: Intern. Kropfkonf. in Bern, 1927.
16. Leblond, C. P., and Mann, W.: Fixation of Iodine by Thyroids of Rats Given Diets Deficient in Iodine, Proc. Soc. Exper. Biol. Med. *49:* 102-105 (Jan.) 1942.
17. Leblond, C. P., and Sue, P.: Passage de l'iode radioactif (I*128) dans la thyroide stimulee par l'hormone thyriotrope de l'hypophyse, Compt. rend. Soc. de biol. *133:* 543-545, 1940.
18. Leblond, C. P., and Sue, P.: Iodine Fixation in Thyroid as Influenced by Hypophysis and Other Factors, Am. J. Physiol. *134:* 549-561 (Oct.) 1941.
19. Beblond, C. P.; Sue, P., and Chamorre, A. I.: Passage de l'iode radioactif (I*128) dans la thyroide d'animaux sans hypophyse, Compt. rend. Soc. de biol. *133:* 540-543, 1940.
20. Leipert, T.: Die Bestimmung Kleinster Jodmengen in Organischem Material, Biochem. Ztschr. *261:* 436-443, 1933.

21. Lunde, G., and Wulfert, K.: Uber die Verteilung des Jods in Normalen und Jodbehandelten Hyperthyreotischen Schilddrusen, Endokrinologie *7:* 327-363, 1930.
22. Mann, W.; Leblond, C. Pl. and Warren, S. L.: Iodine Metabolism of Thyroid Gland, J. Biol. Chem. *142:* 905-912 (Feb.) 1942.
23. Matthews, N. L.; Curtis, G. M., and Brode, W. R.: Determination of Iodine in Biological Material, Indust. and Engin. Chem., Anal. Ed. *10:* 612-615 (Oct.) 1938.
24. Marine, David: Quanitative Studies on the InVivo Absorption of Iodine by Dogs Thyroid Glands, J. of Biological Chemistry *22:* 547-550 (Oct.) 1915.
25. Marine, D., and Rogoff, J. M.: The Absorption of Potassium iodid by the Thyroid Gland in vivo Following its intravenous injections in constant Units, J. Pharmacol. & Exper. Therap. *8:* 439-444 (Aug.) 1916.
26. Marine, D., and Feiss, H. O.: The Absorption of Potassiom Iodid by Perfused Thyroid Glands and some of the Factors Modifying It, J. Pharmacol. & Exper. Therap. *7:* 557-596 (Dec.) 1915.
27. Marine, D., and Rogoff, J. M.: How Rapidly does the Intact Thyroid Gland Eleborate its Specific iodin-containing Harmone, J. Pharmacol. & Exper. Therap. *9:* 1-10, 1916.
28. Merke, F.: Uber die Histologischen Veranderugen und die Jodspeicherung in Basedowschilddrusen nach grossen Jodgaben, Beitr. Klin. Chir. *140:* 475-406, 1927.
29. Perlman, J.; Morton, M. E., and Chaikoff, I. L.: The Rates of Formation of Thyroxine and Diiodotyrosine by the Intact Normal Thyroid Gland, J. Biol. Chem. *139:* 449-456 (May) 1941.
30. Sturm, A.: Der Jodstoffwechsel der uberlebenden Kunstlich durchstromten Hundeschildruse, Ztschr. f. d. ges. exper. Med. *74:* 514-554, 1930.
31. von Mutzenbecher, P.: Uber die Bildung von Thyroxin aus Dijodtyrosin, Ztschr. f. physiol. Chem. *261:* 253-256, 1939.
32. Wheeler, D.: A Histological and Biochemical Study of Pathological Thyroid Material with Special Reference to the effect of Lugol's Solution, Canad. M. A. J. *22:* 157-166 (Feb.) 1930.

REPAIR OF CRANIAL DEFECT BY INSERTION OF A VITALLIUM PLATE

WILLARD H. PARSONS, M. D., F. A. C. S.
Vicksburg, Mississippi

THE constantly increasing mechanization which is part of modern civilization, if it is possible to describe the present world turmoil in any such terms, bids fair to result in a constantly increasing number of head injuries, which are associated, in turn, with a loss of cranial structures and the presence of deformities and defects of the cranial contour. The indications for the repair of these defects are more than cosmetic. Grant and Norcross[3], in a collective (admittedly incomplete) review of 1,385 cranioplasties, list the indications as "severe headaches, dizziness, undue fatigability, vague discomfort at the site of the defect, a feeling of apprehension and insecurity, mental depression and intolerance to vibration," "Defects that pulsate unduly or that are painful," and "Epilepsy, when the attacks originated from the injury that caused the defect." Why epilepsy should be benefited by cranioplasty is not clear, but in the 27 personal cases reported by Grant and Norcross in which focal attacks were the indication for the operation, 6 patients were cured and 12 greatly benefited; the others were either unimproved or made worse. The so-called "syndrome of the trephined" is also benefited by cranioplasty, but the mechanism of improvement is not clearly understood.

Contraindications to the operation, in addition to the usual contraindications to any surgical procedure, include the presence of an active or recently active infection or irreducible elevation of the cerebrospinal fluid pressure. The advent of chemotherapy, brilliant though the results of the method have been, does not invalidate the statement that in the presence of recent infection operation should be deferred for a suitable period of time.

In the group of cases collected by Grant and Norcross, which is carefully analyzed and is probably the largest collective series on record, the immediate mortality rate was extremely low (0.73 per cent), which is as it should be. Postoperative complications are almost nonexistent. They include chiefly infection of the graft and meningitis, both of which are very unusual.

The evaluation of end-results is as difficult in cranioplasty as in many other fields, and many of the reported cases are inadequately followed up or not followed up at all. The results secured by Grant

From the Vicksburg Hospital, Inc., and the Vicksburg Clinic, Vicksburg, Mississippi.

and Norcross in cranioplasty for epilepsy have already been mentioned. Of 18 other patients subjected to cranioplasty plus cerebral excision, 2 were cured, 1 greatly benefited, 7 improved, and 8 either not improved or made worse. Almost all the patients operated on for such indications as an unsightly scar or painful and pulsating defects were cured. The results are less uniformly satisfactory when operation is undertaken for the relief of headache, weakness, paralyses and/or visual impairments, but it nonetheless seems to have a definite value beyond the simple closure of the bone defect.

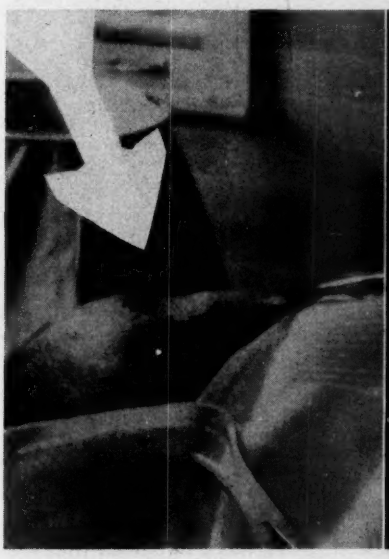


FIG. 1. Depressed pulsating defect.

FIG. 2. Defect prior to surgery.

There has been general agreement as to the indications for cranioplasty and the value of the operation for more than two and a half centuries. In their informative review of the subject, Grant and Norcross mention that the first cranioplasty in man was reported by Van Meekren in 1670. There is considerably less agreement as to the materials to be used for the repair. Those which have been employed include autogenous and heterologous bone grafts from various sources, cartilage, celluloid, silver, gold, aluminum, platinum and calcium paste. According to Grant and Norcross, Booth and Curtis first used a metal (aluminum) plate in 1893. Their patient died 10 days after operation.

Grant and Norcross stated that they were thoroughly satisfied with the operative procedure of repairing the cranial defect by a

suitable bone transplant, but others do not fully agree with them. Among the objections to the method are the technical difficulties, which are not, however, insuperable, and the fact that it is always time-consuming. If, therefore, a metal plate equally as satisfactory as a bone graft could be fashioned preoperatively to fit the defect, operation would be greatly simplified. Naffziger, in a discussion of

FIG. 3. Cranial defect surgically exposed.

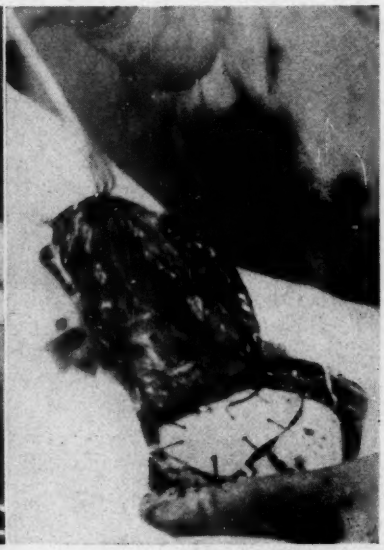


FIG. 4. Vitallium plate inserted.

Grant and Norcross' paper, remarked, "We have not been pleased with the results obtained by using foreign materials," but did not mention why he had arrived at this depressing conclusion.

Venable[4], whose discussion concerned only the internal fixation of fractures, pointed out that in the selection of metals "there are three cardinal principles, three essential factors, which must be accepted and considered as a whole for the single purpose of securing and maintaining fixation without incurring changes that are detrimental to bone and that thus defeat the purpose of mechanical stability. These factors are:

"(1) electrolysis (chemical);
"(2) physical properties; and
"(3) application."

He and his associates had previously suggested vitallium as a satisfactory agent for the internal fixation of fracture, and the

passage of time and the accumulation of a large number of cases has proved the justification for both their original and their subsequent claims concerning the value of this alloy. Other surgeons have substituted vitallium for the head of the femur, portions of the common duct, and other structures in various locations, in all of which it has proved a remarkably satisfactory substitute for normal tissues.

FIG. 5. Postoperative roentgenograms.

FIG. 6. Patient at discharge.

In view of the good results achieved with it in other locations, it was logical that vitallium should be employed for the repair of cranial defects. Geib[2], who seems to have been the first to use it for this purpose, pointed out that it lacks the disadvantages of bone grafts and metal plates and has many advantages in itself. Autogenous bone grafts, he stated, which have hitherto given the best results in cranioplasty, may be absorbed and must be inserted by a complicated procedure. Metal plates lack rigidity and are likely to provoke a reaction. Vitallium, on the other hand, is neutral in vivo and is noncorrosive and inexpensive. It can be inserted by a less complicated procedure than bone grafts, and convalescence is rapid. All in all, Geib concluded, on the basis of the 4 cases in which he used the alloy, vitallium permits "the strongest and least complicated plastic repair of the skull known." Beck[1], who also reported 4 cranioplasties performed by this method, is equally enthusiastic.

I am reporting herewith a case in which I used vitallium to close a large cranial defect, feeling that the number of reported cases in which this material has been used is still so small as to justify the report of a single case. Insufficient time has elapsed to offer any opinion as to ultimate results, but the immediate effect has been excellent and it is well known that failures after the operation usually manifest themselves promptly. My personal experience corroborates that of Geib and Beck that the use of a suitably prepared alloy plate is far simpler than the insertion of a bone graft and that vitallium serves as an admirable substitute for normal structures in the head as elsewhere in the body.

Case Report

D. H., a colored man 43 years of age, was registered at the Vicksburg Clinic Sept. 14, 1941, following an industrial accident. He was comatose and in shock and his pulse rate was greatly depressed. Examination revealed a laceration of the scalp and an extensive fracture of the skull in the right parietofrontal region. Immediate lumbar puncture was done. The spinal fluid pressure was 21 mm. of mercury but fell to 10 mm. of mercury after 20 c.c. of bloody fluid had been drawn off.

Following an intravenous infusion of 50 c.c. of 50 per cent sucrose in physiologic saline solution the patient reacted sufficiently to warrant decompression of a very large depressed skull fracture. A large fragment of bone was excised and an enormous hematoma was removed by suction and irrigation. The anterior branch of the meningeal artery was ligated, after which the wound was closed without drainage.

The patient stood the operation well and his convalescence, during which he was treated by routine conservative measures, was satisfactory. He was discharged from the hospital in good condition and well oriented, as he had been throughout his postoperative course, 25 days after operation. The wound was well healed but a cranial defect was present measuring 7 by 7 by 7 cm. in the right parietofrontal region.

The patient returned to the Clinic November 5 and December 3. Each time he complained of severe headaches and on the latter occasion a marked pulsation was observed at the site of the cranial defect. He was next seen April 22, 1942, some 7 months after his injury. At this time he stated that he had obtained a job with a large lumber company one month before but had been able to work only an hour because of a "whirling sensation" in his head. He felt the same sensation and developed a severe headache whenever he was exposed to the sun, even for a brief period of time. Examination of the cranial defect again showed marked pulsation. The affected area was greatly depressed but the skin was not adherent to the underlying structures.

On June 6, under cyclopropane anesthesia, the cranial defect was repaired by the insertion of a vitallium plate.* The patient made a smooth recovery and when he was discharged from the hospital twelve days later the wound was well healed and his general condition was excellent.

The patient returned for examination on July 1. Local examination re-

*Vitallium plates are prepared by Austenal Laboratories, Inc., New York City.

vealed the vitallium plate to be firmly attached. There was no evidence of tissue reaction. He stated that his symptoms had completely disappeared, that he could walk in the sun without headache or other discomforts, and that he was willing to return to work and to relinquish the compensation he had been collecting from his original employer.**

SUMMARY

The status of cranioplasty is briefly reviewed, with particular reference to the agents used for the repair of the bony defect.

A case is reported in which vitallium was used for the repair of an extensive cranial defect. The operation was performed without difficulty and the immediate result was excellent.

REFERENCES

1. Beck, C. S.: Repair of Defects in Skull by Ready Made Vitallium Plates, J. A. M. A. *118:* 798-799 (March 7) 1942.
2. Geib, F. W.: Vitallium Skull Plates, J. A. M. A., *117:* 8-12 (July 5) 1941.
3. Grant, F. C., and Norcross, N. C.: Repair of Cranial Defects by Cranioplasty Ann. Surg. *110:* 488-512 (Oct.) 1939.
4. Venable, C. S.: Factors in Choice of Material for Bone Plates and Screws, Surg., Gynec. & Obst. *74:* 541-545 (Feb. No. 2A) 1942.

**November 1, approximately five months following surgery, the patient was working and experiencing no further difficulty.

SPONDYLOLISTHESIS TREATED BY POSTERIOR BONE GRAFT: FRACTURE OF VERTEBRA ABOVE GRAFT

HOWARD A. SWART, M. D., F. A. C. S.
Charleston, West Virginia

SPONDYLOLISTHESIS is the term given to a pathologic condition of the spine in which the neural arch between two vertebrae is in two parts, allowing the upper vertebra to slip forward on the lower. This occurs most often at the junction of the fifth lumbar vertebra and the sacrum.

The condition is either congenital or may follow trauma to a region which is weak from birth.

Treatment in the past has consisted of external support by means of braces or belts, or internal support by means of bone grafts. Meyerding[1] uses double grafts running across the weakened area from the lower lumbar spine to the sacrum. He reports satisfactory results in 99 cases. Kleinberg[2] has used chip grafts and beef bone grafts with relief of pain following operation.

In recent years, the use of bone grafts placed anteriorly by means of an abdominal approach has been advocated by several authors. Capener[3] first introduced the idea but stated that the technical difficulties were too great for its accomplishment. Burns[4], Jenkins[5], Mercer[6], and Speed[7], have reported cases successfully treated by this method. They all state that results from the use of the posterior graft have been unsatisfactory, leading to the search for a new method. However, the dangers incident to an abdominal approach are not inconsiderable. Indeed, Mercer had one patient die of thrombosis of the superior mesenteric artery eight days following operation.

It might seem that a graft placed anteriorly would afford greater strength than the conventional posterior graft. The following case is presented to show that a single posterior bone graft does possess all the strength necessary for solid fixation.

CASE REPORT

C. S., white male, age 29 years, was admitted to The Charleston General Hospital, Dec. 28, 1935, for treatment of injuries suffered in a fall of slate while at work as a coal miner. A large amount of slate had struck his back, right hip and leg.

Examination revealed a fracture of the medial tuberosity of the right tibia without displacement. He did not have any other complaints and a cast was applied to the leg. The following day, because of his complaint of back pain,

a roentgenogram was taken which showed six lumbar vertebrae with a definite spondylolisthesis of the sixth lumbar vertebra on the sacrum.

While it was impossible to be sure that the spondylolisthesis was due to the injury, the man stated that he had never had back trouble before and worked in a bent over position, loading coal, without discomfort.

One week after admission, a hyperextension cast was applied from the upper chest to the pelvis. This was connected to the cast on the right leg which had previously been applied. Following this, his back pain was relieved.

The leg cast was removed after six weeks and in a few days the patient was allowed to be ambulatory, wearing the body cast.

The body cast was worn three months following which a Taylor back brace was applied. He had little pain while the brace was on but on its removal the pain recurred.

Because of the continued pain and disability, this man was operated upon on Sept. 8, 1936. At this time, a tibial bone graft was fitted across the lumbosacral area. It extended from the spinous process of the fourth lumbar vertebra to the mid-sacrum. The bone of the laminae and spinous processes was chipped up and placed around the graft. The patient was kept on a hard bed. The wounds healed well and in six weeks he was allowed to be up, wearing the Taylor brace.

The back pain was very much relieved following operation. He noted especially that the severe pain which formerly had kept him awake at night, had disappeared.

He wore the brace steadily for nine months, then gradually discarded it. Roentgenograms of the spine taken ten months after the operation showed the bone graft to be in good condition with some evidence of callus formation.

Approximately one year after the operation he returned to work. On Sept. 24, 1937, one year and sixteen days following operation, he came back again stating that he had injured his back the day before. He had been carrying a seventy-five pound box when his foot slipped. He felt something give way in his back and he fell to the floor. He had severe pain and was unable to continue with his work. Examination revealed marked tenderness in the mid-lumbar region. All spinal motions were very much restricted by pain. It was suspected that the bone graft had been fractured.

A roentgenogram was made, which to our surprise showed that there was a mild compression fracture of the body of the fourth lumbar vertebra and that the graft was intact. Review of the previous roentgenograms showed that this vertebra was normal prior to the second injury.

The patient's brace was reapplied and he was seen at monthly intervals. A roentgenogram taken Sept. 23, 1938, one year after the second accident, showed healing of the fracture, also increased callus around the graft. At that time he was improving and leaving his brace off most of the time. This man was seen again Feb. 14, 1942. He had been working steadily and had had no pain in his back. There was some limitation of motion in the lumbar area of the spine. X-rays showed good healing of the fracture of the fourth lumbar vertebra and a large amount of callus around the graft which was in good condition.

It may safely be concluded from this experience that the posterior bone graft when properly placed is sufficient to stand any ordinary

strain placed on the back. This man suffered an injury at a time when there was still some atrophy of the bones of his spine due to immobilization and disuse following operation. However, when the severe strain came, it was not the graft which gave way but a vertebral body above it.

REFERENCES

1. Meyerding, H. W.: Spondylolisthesis As An Etiologic Factor in Backache, J. A. M. A. *111:* 1971 (Nov. 26) 1938.
2. Kleinberg, S.: Spondylolisthesis with Report of 4 Cases, Am. J. Surg. *10:* 521, 1930.
3. Capener, N.: Spondylolisthesis, Brit. J. Surg. *19:* 374, 1932.
4. Burns, B. H.: An Operation for Spondylolisthesis, Lancet. *2:* 1233, 1933.
5. Jenkins, J. A.: Spondylolisthesis, Brit. J. Surg. *24:* 80, 1936.
6. Mercer, W.: Spondylolisthesis with Description of a New Method of Operative Treatment and Notes of Ten Cases, Edinburgh M. J. *43:* 545, 1936.
7. Speed, K.: Spondylolisthesis; Treatment by Anterior Bone Graft, Arch. Surg. *37:* 175 (Aug.) 1938.

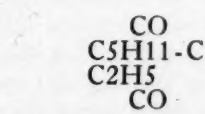
INTRAVENOUS ANESTHESIA IN MAJOR SURGERY

(Sodium-Pentothal-Oxygen)

T. C. Davison, M. D., F. A. C. S.
Atlanta, Ga.

FOR four years I have used pentothal-sodium-oxygen anesthesia in all surgical operations, both private and clinic cases, regardless of the length of time required for operation. In 1938, I visited a clinic in a neighboring state and saw this anesthetic being used. I realized its potentialities and immediately began its use. It was first used in Georgia at the Georgia Baptist Hospital in Atlanta, later in other Atlanta hospitals and now throughout the State.

This report is based upon more than 9,000 operations, all in Atlanta hospitals, but performed by various surgeons in different specialties. The majority of these anesthetics were given by the anesthetists staff of the Georgia Baptist Hospital, where more than 95 per cent of all anesthetics now given are pentothal. Pentothal-sodium-oxygen has gained in popularity rapidly and more surgeons are using it daily. My first experience with intravenous anesthesia was several years ago when sodium amytal was used intravenously. It was customary then to inject a full dose into the vein and withdraw the needle. The results were varied. Some patients did not relax, while others slept twenty-four hours and, due to depression of the respiration for so long, developed pneumonia. The mortality rate was rather high. Then came evipal for minor surgical procedures, then Abbott Laboratories developed pentothal sodium which chemically is sodium ethyl (1 methyl-butyl) thio barbituric acid.



which is formed by replacing one atom of oxygen by sulphur on the urea side of the molecule. In my opinion it is superior to any other intravenous anesthetic agent. It is an ultra-short acting barbiturate and it is rapidly destroyed in the body. If administered correctly, it is controllable, and is a relatively safe anesthetic agent to use.

A special technic for its administration has been developed at the Georgia Baptist Hospital, improving in several respects the method used in the beginning. Formerly two people were required to administer it, one to handle the syringe and needle, while the other held the patient's chin up and administered oxygen. This method, though satisfactory for a short operation, was objection-

able for major surgery. My former associate, Fred F. Rudder, devised a syringe holder with a rack and pinion gear which simplified the method of administration (figs. 1 and 2). I formerly used a 5 per cent solution, but in two cases a thrombosis of the vein from the elbow to the shoulder developed. I now use a 2.5 per cent solution and have had no further trouble.

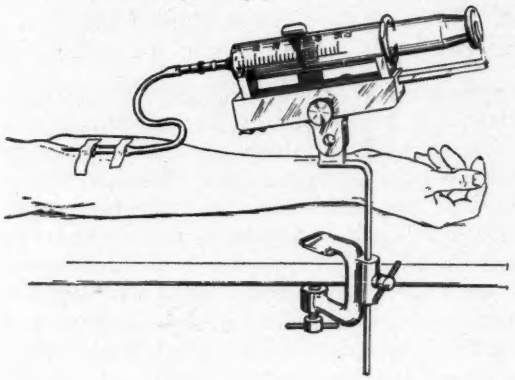


FIG. 1.—Detailed drawing showing apparatus set up for use.

Sodium-pentothal-oxygen has been put to test in all types of operations. My experience has been limited to its use in general surgery and gynecology, but surgeons in other specialties, including urology, orthopedic, neurosurgery, eye, ear, nose and throat, plastic, oral surgery, are equally enthusiastic. It is a Godsend to the aged and the poor risk as they apparently stand it unusually well. Our oldest patient was ninety-six and the youngest two years of age. It should be given very cautiously to young children. We have found that diabetes and jaundice were no contraindications to its use. It being a respiratory depressant, I do not advise its use in extensive operations on the thorax; here a pressure gas-oxygen anesthetic is indicated.

This agent, like ether or any other drug, must be given for its effect, in sufficient quantity to produce the required results, every patient being a law unto himself. Preoperative medication is important. In operations of election, we give sodium amytal or nembutal, grains 3, the night before to assure the patient a good night's

rest and to relieve any nervous factor. This is repeated next morning two hours before the anesthetic, and then one hour before the anesthetic, pantapon, grains 1/6 to 1/3, with atropine, grains 1/150, is given by hypodermic. By the time the patient arrives in the operating room he is already sleepy and requires less pentothal. In emergency cases (or acute abdomens) when time cannot be taken

FIG. 2.—Shows anesthetist holding patient's chin up with one hand and administering sodium pentothal from syringe by simply turning the gear wheel on the syringe holder.

to give the preliminary medication, more pentothal is required to produce anesthesia and to keep the patient asleep. Therefore the cumulative action keeps the patient sleeping longer, in a few instances 12 to 24 hours. While this is undesirable, somewhat distressing to the members of the patient's family, it is not dangerous: the pulse and respiration are normal.

It is a great relief to patients who have had ether in the past, to hear that they need not take an inhalation anesthetic, that there will be no smothering or choking sensation and no nausea upon awaking. About one in twenty patients is nauseated but this may be attributed to the opiate given, and when the opiate is omitted the nausea promptly ceases. The patient awakens as from a natural sleep, and often inquires "When will they operate."

TECHNIC OF ADMINISTERING THE DRUG

A 2.5 per cent solution is made by dissolving 1 gm. of the drug in 40 c.c. of distilled water. The solution should be used while fresh

and never should be kept over for several hours as it deteriorates. A blood pressure cuff and stethoscope are attached to the arm not to be used for venipuncture. This arm is then placed by the side of the body and held there by a fold of the sheet. The other arm is extended on an arm-board at right angles to the body, a rubber tube tourniquet is applied above the elbow to distend the veins, and a vein in the cubital fossa is selected. A vein at the wrist or on the back of the hand may be used equally well. The syringe holder is then adjusted to the arm-board and the loaded syringe placed in the holder. To the syringe is attached a small rubber tube six inches long with a glass connecting tube next to the needle. A 20 gauge needle one-inch long with a short bevel is used. It is best to attach this needle to a 5 c.c. syringe that is partially filled with saline and enter the vein selected. We often inject a drop of novocaine solution into the skin with a small hypodermic needle at the point where we expect to use the 20 gauge needle. When the vein is entered the tourniquet is released and a small strip of adhesive, previously prepared and handy, is placed across the needle in the vein and held firmly, while the attached syringe is removed and the glass connecting tube inserted gently into the needle. Another small strip of adhesive is placed across the glass connecting tube to hold it in place. With the patient talking or counting slowly aloud, the drug is given slowly by turning the gear wheel. After giving 8 to 10 c.c. in 3/4 to one minute, the patient drops off into a normal sleep. A B.L.B. face mask is then adjusted and strapped in place and oxygen given in sufficient amount to prevent anoxemia. Three liters per minute is sufficient for the average patient. After waiting one-half to one minute the patient is given 2 to 3 c.c. more and then the eye lashes are touched lightly with tip of the finger to see if there is any response. Observation of the pupils are of no aid in this anesthetic.

While this has been going on the abdomen is prepared and draped, then before making the incision the skin of the abdomen is pinched lightly with a toothed forcep and if there is no movement the operation may start. After full anesthesia is secured very little more is required and this is given drop by drop as indicated by either rigidity of the abdominal muscles, or any movement of the patient or a groan. The respiration becomes shallow but the pulse rate and blood pressure change very little throughout the operation.

The barbiturates are respiratory depressants and with this anesthetic the respiration becomes shallow and the skin pallid. I have never seen a cyanotic patient in our series. Atropine *must always* precede the anesthetic and oxygen must *always* accompany its ad-

ministration. As soon as the patient stops counting, the oxygen is begun and the skin immediately becomes pink and the color continues good throughout the anesthetic. Sometimes in serious cases such as toxic goiter, the patient is placed in an oxygen tent when returned to bed until he reacts and is out of danger.

In poor risks or in prolonged operations where shock might be expected, we use a "T" connection on the end of the syringe connected with a clysis of 5 per cent glucose in saline, and by simply turning the valve the anesthetic or saline and glucose may be given as desired. I have frequently given citrated blood in the same way along with the anesthetic. There are very few contraindications. When two or more grams of the drug is used, it may have a cumulative action and should be used very cautiously. The maximum dose in my series was 4 gm. When an operation has been prolonged or more than the average dose given, the anesthetist frequently gives picrotoxin 2 c.c. of 3/10 per cent in the vein as the anesthetic is completed and this may be repeated every one half to one hour until the patient reacts. Metrazol 1 to 2 c.c. is also an antidote and may be used. I have had few cases of surgical shock since we have been using this anesthetic. The skin remains dry and warm, and you never see the profuse sweating as in ether anesthesia with its tremendous fluid loss by the skin. If shock occurs it is apt to appear when the patient reacts, there may be a sudden drop in blood pressure, as seen in any other anesthetic, but less often with pentothal. It is my custom to have the nurse watch the blood pressure carefully in all severe operations until the patient reacts.

Some of the complications reported by other operators I consider due to a lack of knowledge or to poor technic—tremor, hiccough, laryngospasm, sneezing and vomiting are due to not giving atropine before the anesthetic or to insufficient anesthesia. Pallor or anoxemia and shallow respiration can be prevented by the use of oxygen. This anesthetic should never be used without oxygen, and the anesthetist who waits "until it is needed," may some day wait until too late. One death was reported in an aged patient with strangulated hernia. This death was due to profuse vomiting and aspiration of vomitus. This in turn was due to not being put to sleep promptly. If the patient had been asleep he would not have vomited.

I have seen two patients with an idiosyncrasy to the drug. A few hours after the anesthetic there appeared a fine scarletina skin rash and a temperature 102 to 103, which disappeared in forty-eight hours. A few patients have slept 8 to 24 hours. This occurred in

young children or in adults who had taken an unusually large dose, but there were no bad results.

TYPE OF OPERATION

General Surgery	3280
Gynecology	1805
Eye, Ear, Nose and Throat	645
Orthopedic	435
Urology	825
Neuro-Surgery	270
Dental Surgery	80
Plastic Surgery	240
Others	40

Many have the impression that pentothal is useful only in minor surgical procedures, others claim that it does not give proper relaxation in abdominal cases. If the anesthetist is properly trained in its administration you will get relaxation and I consider it the most pleasant as well as the safest anesthetic available.

October, 1942.

INFECTED PRESACRAL DERMOID CYST WITH PERFORATION OF THE VAGINA

GEORGE H. EWELL, M. D.
and
RUSSELL JACKSON, M. D.
Jackson Clinic
Madison, Wisconsin

TUMORS and cysts of the sacrococcygeal region are relatively rare. As reported at the Mayo Clinic, they constitute only one out of about 40,000 admissions, and according to Calbet there is only one out of 34,582 tumors of the newborn. The complexity of their composition has given rise to much confusion as regards their classification and mechanism of origin; hence the varied nomenclature such as: ventral tumors, "Middeldorpf tumors," chordomata, dermoid cysts, teratoid tumors and the teratomata, fibrosarcomata, condromixosarcomata, squamous cell carcinomas, fibromata, gliomata, giant cell tumors, and the "histologic potpourri" of Rindfleisch.

The explanation for the great complexity of structure lies in the fundamental embryology of the region. In the embryonic stage we find that various structures, the postanal gut, the notochord and the spinal cord occupy this area. As normal development takes place, these structures gradually become obliterated so that by birth they have completely disappeared. It is believed, however, that tiny segments of these structures which represent different germ layers may be pinched off and remain as germinal centers from which almost any type, or combination of types, of neoplasm may arise. Ewing believes these tumors arise from three primary germinal layers and divides them into teratoids, tumors which are composed of various types of tissues but are not arranged into definite organs, and true teratomas, which are fully formed organs but not related to the neighboring structure.

Dermoids are perhaps the most common of all the types and may be found both anterior and posterior to the sacrum, close to the coccyx or deep in the hollow of the sacrum and in the ischiorectal and pararectal areas usually close to the midline. They are ectodermal in origin with a lining of flat squamous epithelium, which, together with mucus glands in the cyst wall, accounts for the continual desquamation and secretion of mucoid material.

Symptomatology: The symptoms vary from none at all to the most severe variety of backache with painful radiation of sciatic

distribution and pelvic pain produced by a pressure mechanism. Urinary and bowel functions may likewise be interfered with. Quite often the pressure exerted in the region of the rectum leads to erroneous diagnoses of pararectal abscess with repeatedly unsuccessful operative treatment.

Diagnosis: With the exception of the malignant tumors of this region which present the same diagnostic problems as malignancy elsewhere, these tumors are usually firm, smooth, fixed nontender masses, ventral to the sacrum and associated with any one or more of the above symptoms. The most important diagnostic measure is a digital examination of the rectum. Erosion of the neighboring bony structures occasionally occurs and may be shown on the x-ray.

Treatment: Treatment must be aimed at the complete excision of the tumor, usually best achieved by a Kraske type of posterior approach with removal of the coccyx. X-ray is only indicated in the malignant variety of tumors.

Report of Case

Mrs. W. R., 48 years of age, entered the Clinic in September, 1937, complaining of periodic attacks of pain in and about the rectum and vagina and followed by the discharge of pus. The discharge seemed to come chiefly from the vagina. The onset had been about three years previously and she had been operated on in April, 1937, for a fistula in ano. Some of the attacks were associated with chills followed by fever. There had been about four such episodes since the operation. With some of the attacks she was sure that she had passed gas from the vagina.

Her past medical history disclosed three attacks of pneumonia in early childhood followed by effusion and plueral thickening; otherwise there was no history of serious illness. She had undergone appendectomy in 1918 and a gallbladder operation in 1926.

The general physical examination was essentially negative. The Kahn was negative. Hemoglobin 80 per cent, red blood cells 4,550,000, leukocytes 9,650. The urine showed an occasional pus and red blood cell; otherwise negative.

There was a vaginal discharge, and smears showed trichomonads. In the vaginal floor just inside the introitus was a small fistulous opening which led directly into the adjacent anal crypt. The cervix showed no evidence of malignancy. No abnormality of the pelvic organs could be felt. No other openings could be seen in the vagina.

On digital examination of the rectum approximately three inches above the upper anal margin and in the posterior lateral quadrant, could be felt a semisolid, slightly tender mass which was about the size of a small lemon. It seemed to be in the pararectal tissues and not fixed to the rectum. A cordlike structure could be felt leading down towards the area of the anovaginal fistula. Our clinical impression was that of a pararectal abscess. Surgical exploration was advised.

She was again seen in June, 1938. Following her previous visit there had been several mild episodes of lower abdominal soreness with rectovaginal pain,

but only slight vaginal discharge. Digital examination revealed the previously described mass which was larger, smooth and firm and somewhat tender; the cord-like structure could be felt but less distinctly. The anovaginal fistula had closed. Proctoscopic examination was negative except for the scarred crypt.

The clinical diagnosis was a ventral cyst of the sacrum, probably an infected dermoid which had ruptured into the anovaginal septum. Surgical exploration was again advised.

She was next seen in January, 1942. Her chief complaints were soreness in the rectum and a vaginal discharge. The pain and soreness together with a sensation of pressure in the rectum were present all the time but worse during her menstrual periods which have been irregular for the past year. (She is now fifty-two years of age). The discharge from the vagina was present most of the time and she thought there was gas at times, especially if the bowels did not move regularly. At times she would have severe pain in the pelvis, fever and absence of vaginal discharge, and within a few hours or one day there would be a profuse vaginal discharge followed by relief of the severe pain.

The history also disclosed that in September, 1938, she had been operated on for fistula in ano elsewhere. Two operative procedures were done at five day intervals and she was discharged from the hospital in three weeks. One week following her discharge she had as severe an attack as formerly.

Examination in January, 1942, showed a purulent vaginal discharge. There was a scarred granular area in the vaginal floor as previously seen; no opening could be demonstrated on the vaginal side or in the adjacent scarred anal crypt. In the left vaginal wall about an inch from the cervix was a granular area which we were sure was the vaginal opening although a probe would not pass into it and no pus could be seen exuding from it.

The mass on digital examination was larger than formerly and there was rather marked induration and thickening of the surrounding pararectal tissues and thickening in the rectovaginal septum. After several examinations we were still of the same opinion as previously that the lesion was an infected ventral sacral cyst with rupture into the vagina and secondary inflammation of the pelviopararectal tissues. The history of the passage of gas per vagina would naturally suggest that the cyst or abscess cavity communicated with the rectum. No evidence of such a communication could be demonstrated either by examination or at operation, and we concluded that the gas was probably due to a gas producing organism. It is also recalled that at the time of the original examination in 1937, a small fistula was present just inside the introitus and connecting with the adjacent anal crypt; this opening was several inches removed from the vaginal opening that we found.

At the time of the original examination an indurated cord-like area extending from the mass to the region of the small vaginal opening was felt. We assumed then that the abscess perforated the vagina in two places; we question whether it had perforated the anal canal.

The patient was operated upon March 6, 1942 under subarachnoid analgesia. Through a left sided Voelker's incision with removal of the coccyx and last sacral segment, the semi-solid mass was exposed which was about two inches in diameter. As the operation progressed, we concluded that in this case the removal of the last sacral segment would not have been necessary. There was induration of the surrounding fatty tissues which was most marked in the depths of the wound and near the vagina. The mass was intimately adjacent

to the rectal wall but no connection could be demonstrated. In the course of the dissection the rectal wall was accidentally opened, the rent was closed in two layers. The cyst ruptured during manipulation discharging purulent matter; there were no vestigial remnants.

No attempt was made to close the vaginal opening. The wound cavity was dusted with 5 grams of sulfathiazole and the cavity obliterated by sutures. Penrose drains were inserted at the top and bottom of the incision. There was a rather profuse serosanguineous drainage for several days after operation with some separation of the wound edges at the upper margin. Healing progressed and at the present time (Oct. 1, 1942) there is no evidence of recurrence of the abscess.

Pathologic Examination: Attached to the larger cyst wall was a cyst the size of a large cherry; its contents were purulent in nature. The inner lining of both cyst walls were smooth. Microscopic examination of sections from several areas of the cyst walls revealed numerous glands and a lining of flat squamous epithelium from which a few epithelial cells may be seen desquamating into the mucoid material contained within the cyst.

Evidence of acute and chronic inflammatory reaction was seen both in the cyst wall and in the surrounding connective tissue.

THE SURGICAL MANAGEMENT OF CERTAIN PHASES OF LESIONS OF THE STOMACH AND DUODENUM

CLAUDE J. HUNT, M. D.
Kansas City, Missouri

CERTAIN phases in the surgical treatment of lesions of the stomach and duodenum are frequently discussed and no uniform opinion is expressed. These differences, however, are largely personal and the result of former experience and manner of education.

For example, during a period when I personally assisted Professor Finsterer in Vienna, I became very much impressed with local anesthesia, abdominal infiltration and splanic block. This has remained with me as a convincing experience that gastric resection can be done satisfactorily by this method of anesthesia, and I have, on many occasions, used local anesthesia in gastric surgery and other abdominal operations. I have found this most useful in elderly patients and those who have lost a great deal of weight. Finsterer adequately effected excellent anesthesia and good relaxation by thoroughly infiltrating the abdominal wall and widely blocking the peritoneum after the abdomen was opened, before attempting the splanic injection or gastric manipulation. The splanic injection was accomplished by the injection of large quantities of the anesthetic agent (novocain) in the retroperitoneal space behind the stomach, producing wide dissemination of the solution with consequent excellent anesthesia.

We have found, however, other methods more satisfactory and now employ in most instances, either spinal or continuous spinal anesthesia, frequently supplemented by a light analgesia of clycopropane to allay nervousness and apprehension. Continuous spinal anesthesia properly administered by a trained anesthetist gives prolonged anesthesia, excellent relaxation and eliminates many of the unpleasant features of inhalation anesthesia. It must be employed by one experienced in its use and to do otherwise is only inviting disaster. I believe much of the objection to spinal anesthesia is that it is not always given by one familiar with the problems of its administration. I have always thought that long inhalation anesthesia produced more shock and more dehydration through sweating than other forms of anesthesia. Many of these patients are old, have respiratory conditions of a chronic nature, and are poor risks for protracted inhalation anesthesia. The type of anesthetic, however, is one that has to be decided by the surgeon himself, and is de-

pendent upon the facilities available and upon his experience and results with the various anesthetic agents.

There are three factors associated with the surgical treatment of gastric and duodenal lesions. They are, that the lesions should be excised when possible, the duodenum accurately and securely closed and an effective functioning anastomosis made. The lesion, either duodenal or gastric, can usually be excised. Only when the lesion is in the second portion of the duodenum, with marked induration and fixation, does it become particularly difficult. Here one must guard against injury to the common bile duct and make certain of obtaining adequate duodenum above the duct, after the lesion has been excised, to effect secure closure. Exposure of the common bile duct aids materially in assuring the safety of this structure and estimating the amount of uninvolved duodenum available for closure between the duct and the ulcer. We have on repeated occasions exposed the common bile duct, mobilized the duodenum as far as possible and found adequate duodenum for closure in low flying ulcer. However, if this cannot be safely done and adequate duodenum obtained for secure closure, the ulcer may be left in situ and the duodenum closed above the ulcer after removal of the pylorus. If the ulcer is of the hemorrhagic type, the ulcer bed may be cauterized by a coagulating cautery through the open duodenum before closure.

We believe it is essential to excise the pylorus rather than resort to an exclusion type of resection, even though the prepyloric gastric mucosa is excised. We have performed this operation on several occasions, but have abandoned it in favor of pyloric excision as an added prevention against an anastomotic ulcer. In lesions of the first portion of the duodenum with crater formation and induration, excision may be facilitated by inserting the index finger into the duodenum and using it as a guide in dissecting the ulcer from the adherent pancreas. If by this method the crater cannot be removed, it may be left, and the duodenum excised from around it and freed to a point below the ulcer sufficient to accomplish accurate closure. The mucosa of the crater can be destroyed by light cauterization. It will result in no harm. We have employed this procedure on several occasions.

The extent of gastric resection for duodenal ulcer is a matter of considerable dispute. One must decide between a radical extensive resection or a minimal resection. Our policy has been a rather extensive gastric resection of from sixty to seventy per cent of the stomach involving a high resection of the lessor curvature along with the removal of the pylorus. This removes a large portion of the gastric secreting mucosa and inhibits vagal stimulation by vagus

excision. All the smooth antral mucosa should be excised and this can be done only by a high resection of the stomach. The acidity must be reduced to a minimum. In resection for malignancy, an extensive resection of all the gland bearing area must accompany the gastric resection. This must of necessity be high. All the glands along the lessor curavture, as well as the gastrocolic omentum, must be excised. In many instances the great omentum must be removed.

Secure closure of the duodenal stump is essential to the success of gastric surgery. Adequate duodenum must be mobilized to assure adequate closure, after which it should be covered by pancreatic fascia. This, I believe, is preferable to omental reinforcement. I believe the second most frequent cause of unsuccessful gastric surgery is duodenal leakage. The first being pulmonary aspiration, bronchial occlusion and subsequent pneumonia.

The anastomosis between the stomach and the jejunum must be without tension and free from constrictions or angulations. The afferent and efferent limbs must be adequately patent. Whether this anastomosis is made in front of or behind the colon is a matter of choice of the surgeon, but it is essential that no part of the involved structures become angulated or constricted. The posterior anastomosis is often hard to accomplish in high resection if the patient is obese, the mesocolon fat or short, or if the patient is not well relaxed. In high resection, the stomach after anastomosis, cannot be delivered adequately through the opening in the mesocolon for suture and fixation. Again secondary surgery for anastomotic ulcer is more difficult when the anastomosis is behind the colon. The colon is more frequently involved in anastomotic ulceration if the anastomosis is behind the colon.

We have found the anastomosis anterior to the colon preferable in high gastric resection. It is more easily performed, it is less time consuming, and it functions without discomfort to the patient. It is more accessible in the event secondary gastric surgery is necessary. It can be done by either the Polya or the Hoffmeister-Finsterer type of procedure. We prefer usually to close the half of the stomach next to the lessor curvature and anastomose the remaining portion to the jejunum after the Hoffmeister-Finsterer method. Three essentials are necessary in the anterior anastomosis: the great omentum and colon must as far as possible be pulled well to the left, the proximal limb of the anastomosis must be long and without tension, and there must be no enteroanastomosis.

There is no stagnation or discomfort in a long proximal loop and it is essential to avoid tension by the weight of the colon and

omentum. By pulling the colon and omentum well to the left, much bulk can be transferred to the left of the proximal loop.

Anastomosis between the two limbs of the jejunum diverts valuable alkaline contents away from the stomach and prevents alkalization of the gastric contents, most essential when gastric resection is done for ulcer. It is not necessary to drain a redundant proximal loop. It is time consuming, an added danger of infection, and adds nothing to the future functioning of the anastomosis, but may definitely detract from the usefulness of the procedure.

Only in benign scar tissue obstruction of the pylorus from long-standing ulcer do we believe the indirect operation of gastroenterostomy indicated. The results in our experience have been excellent and few complications of secondary anastomotic ulcer have occurred where the operation was performed for a definite cicatricial obstruction and not one due to edema of the pylorus. The decision between gastroenterostomy and gastric resection depends upon the age of the patient and the degree of gastric acidity. In elderly patients the more conservative procedure is preferable. In younger individuals with a high gastric acidity, resection should be performed. One must also consider the operative mortality of radical resection with that of the more conservative operation of gastroenterostomy. It is reasonable to assume that a less radical operation will have a lower operative mortality than one more radical. That has been, at least, our experience. The mortality rate of resection in a patient in poor physiologic condition for surgery, as long-standing obstruction cases are, is certainly greater than the incidence of secondary anastomotic ulceration.

Conclusions

The choice of anesthesia is dependent upon factors relative to former success and experience of the operating surgeon. Many forms can safely be employed and the familiarity of the surgeon with the various agents is of the greatest importance.

Excision of the lesion should be accomplished when possible. Exclusion resection is to be avoided when excision is feasible.

Pylorectomy should be a part of all gastric resections, regardless of whether the lesion is excised or not.

High gastric resection is essential to reduce the degree of secondary ulceration. The advantages of the antecolic anastomosis with long proximal loop without enteroenterostomy is emphasized.

Gastroenterostomy is usually preferable in benign organic obstruction of the pylorus. The age of the patient and the degree of

gastric acidity are important factors for consideration in deciding the type of surgery. The primary mortality of radical resection will exceed the incidence of secondary ulceration following conservative methods.

1016 Professional Bldg.

The Southern Surgeon

Published Monthly by
The SOUTHERN SURGEON PUBLISHING COMPANY
701 Hurt Building
ATLANTA

Subscription in the United States, $5.00

VOLUME XI DECEMBER, 1942 NUMBER 12

FAREWELL FOR THE DURATION

Now that the War is entering its final and most intense year, everything will be more or less subverted to it. Morocco, Tunis, Riviera, Paris and Berlin will be American and British flag stops on the Get Hitler Special. Our exclusive Pacific War at the Solomons, Rabaul, Truk and Manila will likewise see the Eastern Beelzebub ready to shout the Oriental equivalent of "Uncle."

During this next year medical meetings must be passed over while these major objectives are being achieved. At the same time most of the journals of the societies will pass into a state of suspended animation. THE SOUTHERN SURGEON with this issue closes its doors while The Southeastern Surgical Congress and the Texas Surgical Society plan to postpone their meetings until after the Treaty of Washington is signed in Italian, Japanese and German.

The principal editor, Dr. Blackford, is already on duty in Louisiana and several others are either in the Army or on their way. Therefore with this issue we bid you adieu and wish you a Merry Christmas and the whole civilized world a successful War Year.

In the Spring of 1944 after the smoke clears and the dust settles the medical men may begin to filter back into their home communities to resume some semblance of normal life. Gradually we will be able to pick up where we left off and start thinking again of the advances of science. Meetings, articles, journals will seem natural again even though post-War confusions will affect doctors as deeply as anyone else. May the Reconstruction spare us too much agony because we will be the only people in the world able to think

about medical advance. We alone can carry on the scientific traditions which the English, Germans and French began while they will be too engrossed in trying to stay alive to think of anything else.

The alleviation of human suffering, the widening of scientific knowledge, and the free dissemination of discoveries to the world are great parts of the medical tradition which must not be lost in the political skirmishes. The vision of the high-minded resourceful unselfish sympathetic doctor must be preserved at all costs. Also the equally essential private investigator exploring new fields and giving his knowledge to all the world is indispensable. This of course implies leisure for the scientist, financial security, and the facilities of an institution free of political or financial interference. Organized medicine in connection with its other activities should strenuously insist on such scientific freedom as one of the great assets of the race. Since America seems to be the only place in the world where such a lofty ideal can even be proposed, it is plain that the individual American doctor is the world's hope in this effort.

We must make long-range comprehensive plans now that America has become the world leader in all phases of human activity. We must not be found unprepared when the responsibility suddenly faces us in the post-war years. Finally, if we assume this task properly, we will demonstrate the greatness of American science and fulfill our obligation to the great forebears of the men of medicine.

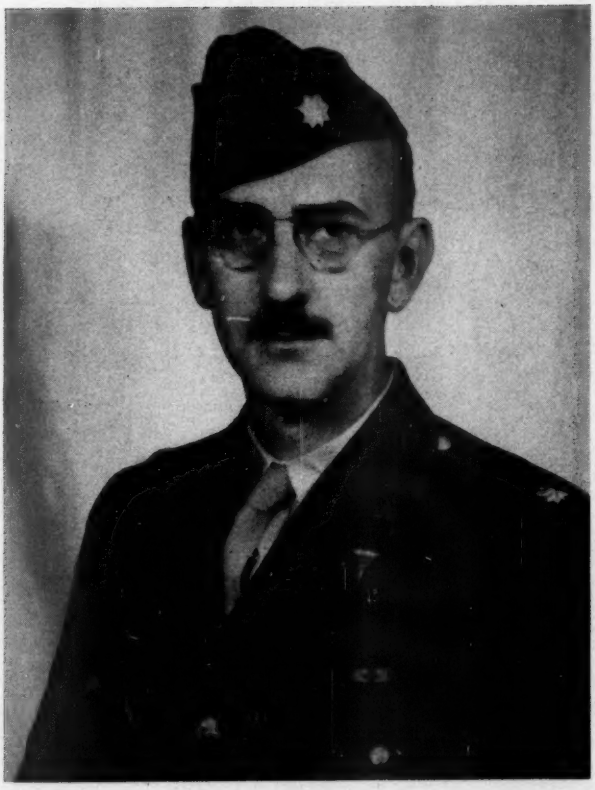
All of us in the South are aware that our grandfathers went through a ghastly four year war, a cruel ten year Reconstruction and a whole generation of tedious recovery. In other words their problems were vastly greater than ours and still they were able to raise a great scientific tradition which is recognized everywhere. Let no man say that we cannot in like manner rise above the problems which our Reconstruction will bring.

WALTER STUCK, M. D.

NOTICE TO ADVERTISERS AND SUBSCRIBERS

After this issue THE SOUTHERN SURGEON will not be published for the duration.

Publication will be resumed at the direction of the Executive Council of The Southeastern Surgical Congress.



L. Minor Blackford, M. D.

DR. MINOR BLACKFORD

Our Editor

In this last issue of THE SOUTHERN SURGEON "for the duration," it is fitting that the efforts of the man who has been its editor since its inception be appropriately acknowledged. Throughout the past eleven years, Dr. Blackford has been one of the mainstays of THE SURGEON. He has used his exceptional talents as an editor untiringly and in a manner which has won for him the esteem of the entire membership of The Southeastern Surgical Congress.

The first issue of THE SURGEON, in 1932, carried an editorial by Dr. Blackford, in which he made the statement: "The journal must be one in which every Southerner can take pride." With due thanks to him, THE SURGEON has been such a journal. With the conviction that it is the sentiment of every member of The Southeastern Surgical Congress, and of the Texas Surgical Society as well, I wish to express to Dr. Blackford a profound appreciation of his efforts and to pay him full tribute for his success in helping to make our journal the excellent publication which it has become.

It is a pleasure, also, to voice my own high regard for Dr. Blackford and my personal gratitude for his inspiration and assistance on numerous occasions. During my two years of office as President-Elect and President, especially, I called upon him repeatedly and his counsel and cooperation were unfailing. I count it a privilege to call him a friend.

When the war is over and THE SOUTHERN SURGEON is resumed, let us hope that Dr. Blackford will again undertake the guidance of its editorial destiny and restore it to a place of distinction among the scientific journals of the day.

R. L. SANDERS, M. D.

DR. BLACKFORD'S BOOK REVIEWS

One of the most distinctive parts of a medical journal is the Book Review Section. As a matter of fact, a medical journal can usually be rated according to the standard of its book reviews. Based on such conclusions THE SOUTHERN SURGEON has been classified as an A-1 medical journal and the cause for such is none other than Dr. Blackford.

Dr. Blackford's reviews were critical when indicated, but in a dignified manner without any destructive attitude: he would always leave the author a suggestion to improve his next edition, provided of course the book was worthy of another publication.

Dr. Blackford's most delightful literary review was in that book which he claimed "hit the spot." Here again he was masterful. His praises were to the author as words from Hippocrates.

We shall look forward to the day when THE SOUTHERN SURGEON will resume publication and again bask in the literary remarks of Dr. Blackford in the Book Review Section.

H. EARLE CONWELL, M. D.

BOOK REVIEWS

The Editors of* THE SOUTHERN SURGEON *will at all times welcome new books in the field of surgery and will acknowledge their receipt in these pages. The Editors do not, however, agree to review all books that have been submitted without solicitation.

TRAUMATIC SURGERY OF THE JAWS INCLUDING FIRST-AID TREATMENT. By KURT H. THOMA, D. M. D., Professor of Oral Surgery and Brackett Professor of Oral Pathology, Harvard University; Oral Surgeon to Brooks Hospital; Consulting Oral Surgeon to New England Baptist Hospital; Visiting Oral Surgeon, Beth Israel Hospital; Surgeon, Dental Department, and Consultant to Tumor Clinic, Boston Dispensary. 315 pages, with 282 illustrations. Price, $6.00. St. Louis: The C. V. Mosby Company, 1942.

Traumatic Surgery of the Jaws represents a 1942 review of the approved ideas and technics which have been accumulating on the subject since before Hippocrates. The book is designed for the surgeon who will have to handle run of the mill jaw injuries, becoming of such importance with present day political and industrial conditions. An appreciable concept of its contents will be of use not only to the combat surgeon but also to the general surgeon managing at home. Industrial accidents and the possibility of civilian injuries are increasing.

The first portion of the book is concerned with general measures, diagnostic (signs and symptoms) and therapeutic (medical and surgical). A fuller discussion of shock and its treatment can probably be found elsewhere.

This book is written clearly, and an intelligent grasp of its contents is facilitated by very numerous diagrams and pictures. The efficacy of recommended measures is attested to by the inevitable "before and after" photographs. Details of general surgery—as the choice of suture, cosmetic considerations, and effects of complicating local pathologic conditions, as infected teeth, etc., are well sown throughout the more specific discussions. Conditions peculiar to the oral area are brought out. Thus the vascularity of structures about the face may influence the extent of debridement, since apparently nonviable areas of tissue, were they elsewhere, may become remarkably alive.

Facts of cultural value are injected into the text. One is surprised to learn that the practice of ligating teeth adjacent to a fracture was made use of in the thirteenth century, while the splinting of a fractured mandible by ligation of lower to upper teeth was performed as early as 1275 A. D.

That portion devoted to local anesthesia, because of its clearness, its many illustrations, and its attention to detail is especially recommended.

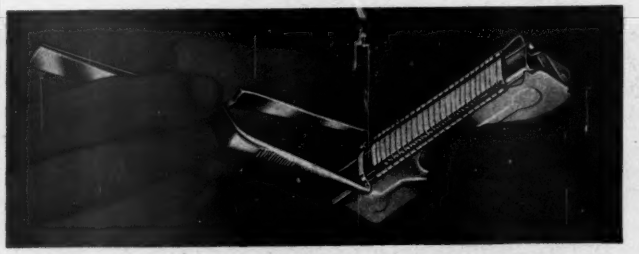
The major portion is concerned with the traumatic conditions themselves and with their proper management, early and late. The conditions are considered categorically with respect to the sites of the individual lesions.

Access to this volume is recommended for those who may be confronted with conditions considered by it.

H. H. T.

INDEX TO VOLUME XI

Book reviews are grouped together and are indexed under that heading in alphabetical order.



NEW!

Any size wound clips can be used on the Bowen-Adams Wound Clip Rack. Illustration shows the technic of removal with the Hegebarth-Adams Clip Forceps.

BOWEN-ADAMS WOUND CLIP RACK

The Bowen-Adams Wound Clip Rack and the new improved Hegebarth-Adams Forceps provide a new technic for wound clip application. This new technic eliminates the danger of cutting the hands or gloves on the points of the wound clip and at the same time protects the points so that they are always sharp and at the proper angle. It also eliminates, to a large extent, the tendency to compress the clips before they are applied to the skin since the Rack provides the necessary counter-tension.

This new technic provides for the first time a convenient method for the doctor to use wound clips without assistance, such as will often happen in private practice or in emergency use.

The new Hegebarth-Adams Wound Clip Forceps has two teeth, forming a V on both tips. The V's straddle the upper parts of the points, preventing their slipping sideways, a valuable feature whether or not the Rack is used.

B-2339/SS Bowen-Adams Wound Clip Rack, made of Stainless Steel, each $2.00, dozen $20.00.

B-2323/SS New Hegebarth-Adams Wound Clip Applying Forceps, made of stainless steel, self-retaining, clips do not fall out, each $2.50, dozen $25.00.

Ask your surgical dealer for further details.

CLAY-ADAMS CO INC.

BUY WAR BONDS

Index Number

Volume XI December, 1942 Number 12

The Southern Surgeon

CONTENTS

Published Monthly
by
THE SOUTHERN SURGEON PUBLISHING CO.
701 Hurt Building
Atlanta, Ga., U.S.A.

Entered as Second-Class Mail Matter July 24, 1936, at the Post Office at Atlanta, Ga., Under the Act of March 3, 1879.

WOUND INFECTION

its prevention and control

. . . in Compound Fractures

. . . the possibility of infection must always be considered. If it develops the result is often delayed union, non-union or chronic osteomyelitis. Prevention or control of infection is therefore of paramount importance.

The literature indicates the value of Azochloramid as a prophylactic agent in such cases.

In a paper entitled "Prophylaxis Against Infection in Compound Fractures" (Clin. Med. & Surg., Vol. 44, No. 3, pp. 117-119) the author reports "For the after care of these wounds I have been using . . . Azochloramid in Triacetin 1:500. This has proved to be non-irritating to the tissues, general in its bactericidal action and active in the presence of organic matter. Moreover, it is sufficiently stable so that, for prophylaxis, dressings once daily are adequate."

ACCEPTED AMERICAN MEDICAL ASSN.

Azochloramid® N-N'-DICHLORAZODICARBONAMIDINE MEETS THE CHALLENGE OF INFECTION

Azochloramid is used extensively by the Army and Navy

Trial quantities and comprehensive literature sent to physicians on request

WALLACE & TIERNAN PRODUCTS, INC.
Belleville, New Jersey, U.S.A.

A-4